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REPORT OF THE SEVENTH SESSION

of the

INTERNATIONAL POPLAR COMMISSION

and Proceedings of the

FIFTH INTERNATIONAL POPLAR CONGRESS

Germany— May 1953

FOOD AND AGRICULTURE ORGANIZATION OF THE UNITED NATIONS

ROME 1954

Note : An ad hoc Working Group has been entrusted with the adaptation of the International Commission's nomenclature to the decisions recently taken by the International Horticultural Congress at London. While waiting for the Working Group to carry out its task, the Secretariat thought it advisable to reproduce the reports as submitted by their authors.

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I - REPORT OF THE SEVENTH SESSION
OF THE
INTERNATIONAL POPLAR COMMISSION

A. GENERAL REPORT

The International Poplar Commission held its 7th Session at the Hotel Kölner Hof, Cologne, on 1 May, and at the "Kurhaus", Baden-Baden, on 4 May, during the 5th International Poplar Congress organized by the government of the German Federal Republic.

The following countries were represented: AUSTRIA, BELGIUM, CHILE, FINLAND, FRANCE, GERMANY, GREECE, IRAN, IRELAND, ITALY, LUXEMBOURG, NETHERLANDS, SPAIN, SWEDEN, SWITZERLAND, SYRIA, TURKEY, UNITED KINGDOM and YUGOSLAVIA. The International Union of Forest Research Organizations was also represented. The following countries had apologized for not being able to attend: Argentina, Canada, Denmark, India, Iraq, Korea (South), Pakistan and U.S.A. The list of participants appears as Annex 1.

Prof. G. HOUTZAGERS, Vice-President, acted as chairman in the absence of Prof. Ph. GUINIER, President of the Commission. Mr. R. G. FONTAINE, Secretary of the Commission, also represented the Director of the Forestry Division of FAO, Mr. LELOUP.

The head of the French delegation conveyed Mr. GUINIER's regret at his inability to attend the Session, due to being unavoidably kept in Paris, whereupon the Commission unanimously passed a motion regretting Mr. GUINIER's absence and expressing their gratitude to him.

The Commission then commenced work on its Agenda.

1. ADOPTION OF THE AGENDA

The provisional agenda, prepared by the Secretariat after consultation with the President, was adopted without amendment.

2. REPORT ON THE ACTIVITIES OF THE SECRETARIAT

The Secretary submitted the report on the activities of the Secretariat, pointing out some special items, and particularly drawing the Commission's attention to the recommendation of the Amman Forestry Conference to hold a meeting of popular experts in Syria in the spring of 1954. He also stated that he had been informed, after the report was already drawn up, of the establishment of a National Poplar Commission in Argentina by a presidential decree No. 13.023 of 15 December 1952, as a result of his correspondence with the Argentinian forest authorities.

The Commission expressed its satisfaction with the work of the Secretariat,

and asked that FAO be consulted as to the feasibility of distributing the Commission's report even more widely.

3. REPORTS ON THE ACTIVITIES OF NATIONAL COMMISSIONS

(a) Outline of the annual report

The outline of the report, prepared by the Secretariat after consulting the Standing Executive Committee, was approved by the Commission. It was, however, agreed that the Secretary should modify the text slightly in order to enable member countries, first, to notify their exchanges of cuttings with other countries, and second, to provide the requisite economic and statistical information in the manner considered most appropriate by National Commissions. With regard to the last point, the extent of poplar plantations or aspen stands should be indicated in hectares, kilometres, or in numbers of trees, according to the inventory methods adopted in each country. The approved outline appears as Annex 2.

The Commission also decided that the annual reports should from now on include activities only until 31 December, and be sent to the Secretariat before 1 February of the following year for distribution to the other member countries at the earliest possible date. Delegates will thus be able to study the reports well in advance of the sessions and give the problems more thorough consideration.

(b) Reports on the activities of National Commissions (or bodies exercising the functions thereof) and statements of the delegates from non-member countries of the Commission.

The Commission decided that it would not hold a detailed discussion of the reports, as some had been distributed only a very short time before the meeting, but agreed instead to the Chairman's suggestion of annexing abstracts of the national reports, which he himself would subsequently prepare, to the present report. These abstracts appear as Annex 3.

The Belgian, French, German, Italian, Spanish, Swiss and Turkish delegates introduced briefly their reports, drawing attention to some particular items.

The delegates from the following non-member countries of the Commission commented on the general poplar situation in their country and the policy adopted: Chile, Greece, Iran, Ireland, Syria and Yugoslavia.

4. METHODS EMPLOYED IN THE STUDIES UNDER WAY

The Chairman stressed the necessity of obtaining comparable results in ex-

periments pointing out, however, that there could be no question of attempting to tackle such a specialized subject in the limited space of time available during the Session. The Commission therefore decided to submit to the National Commissions the papers prepared by Mr. SCHREINER and by the National Commission of the Netherlands on this subject, requesting that they be studied by a special sub-commission whose findings should be sent to the Secretariat within 6 months, that is before 31 December 1953. It was also decided that such findings should be examined by a committee of specialists from the Standing Executive Committee, in collaboration with the International Union of Forest Research Organizations, and that the result of this study be submitted to the Commission at its next Session

5. POPLAR IN THE IMPORT AND EXPORT TRADE CLASSIFICATIONS

A proposal was made to the Commission by the French delegation, and supported by the Belgian delegation, for the introduction of poplar wood as a special heading in the national import and export trade classifications.

The Commission, therefore, recognizing the growing importance of poplar wood in national economies and international exchanges, and the increasing necessity of being versed in its market in order to meet demand, in both quantity and quality, expressed the wish that member governments introduce poplar wood as a special heading in their import and export trade classifications. It further recommended to the National Commissions that they put this question on their agenda, and investigate with the proper authorities the possibilities of complying with such a wish.

6. UTILIZATION OF POPLAR WOOD

No meeting of the Working Group on Utilization was scheduled for this Session in view of the many important events due to take place. On the Chairman's proposal the Commission requested the specialists on utilization questions to get in touch with the Chairman of the Working Group on Utilization, Prof G. GIORDANO, to study with him questions which should be discussed at the Session.

These specialists met informally between the two meetings of the Session, under the chairmanship of Mr. GIORDANO, and drew up a report which was submitted by its Chairman to the Commission. The Commission congratulated the Working Group on the work accomplished, and decided that the report should be annexed to that of the Commission (Annex 4) for study by the National Commissions, who would make their comments at the next Session.

7. USE OF POPLAR IN FOREST STANDS - DRAWING UP OF TECHNICAL REPORTS

The Chairman explained that the use of poplar in forest stands should be the subject of detailed field discussions during the Congress, and that it had been included in the Agenda solely to enable the conclusions or observations made on the spot to be given in the Commission's report. The Commission therefore asked Messrs. BAUER, HERBIGNAT and PICCAROLO to draw up a report containing not only the observations and comments made in the course of the Study Tour on poplar identification and cultivation as by established custom, but also those concerning the use of poplar in forest stands. It was decided that this technical report should be reproduced as a part of the Commission's report.

The Commission also asked Messrs. REGNIER, van VLOTEN and ZYCHA to draw up a report on poplar pests and diseases observed during the Study Tour, also to be reproduced as a part of the Commission's report.

8. POPLAR NOMENCLATURE

The Commission heard statements made by Messrs. POURTET, on behalf of Mr. GUINIER, and Mr. JOBLING, on behalf of Mr. PEACE, regarding both the adjustment of the poplar nomenclature, already approved by the Commission, to the proposals made by recent international congresses, and the establishment of registration of poplar names. The texts of these statements constitute Annexes 5 and 6.

As the International Code of Nomenclature for Cultivated Plants has not yet been published, it was not considered feasible to make definite proposals for the time being. The Commission, however, stressed the importance of the new horticultural nomenclature and decided to set up a select committee composed of Messrs. HOUTZAGERS, PEACE, PICCAROLO and POURTET, to study the possibilities of adapting the nomenclature, already adopted by the International Commission, to the new rules of horticultural nomenclature, and also to study the best means of establishing registration of poplar names.

9. NEW STATUTES AND RULES OF PROCEDURE - ELECTION OF STANDING EXECUTIVE COMMITTEE

The new statutes and rules of procedure proposed by the Secretariat were unanimously adopted with the following modifications to the statutes:

Article 2 paragraph (b):

In place of: "... arranging joint research programs" read: "... arranging joint research programs in collaboration with the International Union of Forest Research Organizations"

Article 8:

In place of: "The 9 members shall be appointed for a term of 4 years by the Commission" read: "The 9 members shall be appointed for a term of 6 years by the Commission"

The Statutes and Rules of Procedure thus adopted appear in Annexes 7 and 8.

In conformity with the Statutes it had just adopted, the Commission then elected the 9 members of the Standing Executive Committee. These are: Messrs. HERBIGNAT (Belgium), POURTET and REGNIER (France), BAUER (Germany), GIORDANO and PICCARO. LO (Italy), JOHNSSON (Sweden), GAILLARD (Switzerland) and PEACE (United Kingdom).

The Commission also decided that it would draw lots at the next session for the three retiring members and it would then proceed with the election of three new members. The same procedure will be followed in 1957 for the six remaining members who were elected in 1953, and three new members appointed. The last three will remain in office until the end of the 1959 session.

10. OTHER BUSINESS

The Swedish delegate stressed the extent of bark injuries caused by some mammals, and the importance of knowing the methods of control and protection which can be employed. The Commission requested member governments to make particular mention in their next annual reports under paragraph II.A) 1) (c) of the damage caused by mammals as well as the methods of control and protection used. A Working Group can be set up at the next session to study the answers given and to make recommendations concerning measures to be taken.

11. DOCUMENTATION

The Commission took note of the documents prepared by the Secretariat and by the national commissions, and also of several reports of verbal statements presented by a number of delegations in the course of the meeting.

A list of the documents or communications made appears in Annex 9.

12. DATE AND PLACE OF THE NEXT MEETING

The Commission agreed unanimously to the proposal made by the head of the Spanish delegation to hold the next meeting in Spain in 1955. The Chairman, on behalf of the Commission, thanked the Spanish National Commission for this offer, which will enable it to study Mediterranean poplars in their natural range. The Secretary will arrange with the Spanish National Commission for an official invitation to be sent to the President of the Commission by the proper Spanish authorities.

The Commission also received very favourably the wish expressed by the head of the French delegation for the 1957 meeting to be held in France, which will mark the 10th anniversary of the Commission's constitution in that country.

Finally, the Commission having taken cognizance of the recommendations made at the Amman Forestry Conference concerning a regional meeting in the Near East, convening not only the countries of the Near East, but also the experts of the interested member countries of the Commission, unanimously approved these recommendations and instructed the Secretary to take the necessary measures to convene such a meeting. In this connection, the Commission also expressed its pleasure at the Syrian delegate's statement that although he was not in a position to give an official invitation, he could vouch for his government's ready welcome of a meeting of poplar experts in Damascus.

13. FIFTH INTERNATIONAL POPLAR CONGRESS

The Commission requested the head of the German delegation to kindly convey its thanks to the government of the Federal Republic for their organization of the Fifth International Poplar Congress. The excellent administrative and technical preparation of this Congress had enabled all participants both to hold discussions and exchange ideas on present day problems and to see for themselves different aspects of poplar cultivation in Germany.

The Commission expressed its warmest gratitude to the German National Poplar Commission, which had organized the Congress and the many excursions accompanying it. It thanked in person its President, Mr. WARSCH, and Professor BAUER for the part they had played in arranging these events, asking that their collaborators might also be informed of the Commission's appreciation.

General Report - ANNEX 1

LIST OF PARTICIPANTS

Chairman : G. HOUTZAGERS (Netherlands)
Secretary : R. G. FONTAINE (FAO)
Deputy-Secretary : O. FUGALLI (FAO)

Mr. R. G. FONTAINE represented the Director of the Forestry Division of FAO

A. DELEGATES

(a) Member Countries

Austria : W. WETTSTEIN, Head of the Department of Silviculture and Forest Genetics of the Federal Institute of Silviculture, Wien-Hadersdorf.

Belgium : A. HERBIGNAT, Inspecteur des Eaux et Forêts, Bruxelles.
C.H. MUHLE LARSEN, Directeur, Institut de Populiculture, Grammont.
H. NORDVIK, Département "Bois et Domaines" de l'Union Allumettière, Grammont.

France : R. JOLAIN, Inspecteur Général des Eaux et Forêts, Paris.
R. ROL, Sous-Directeur de l'Ecole nationale des Eaux et Forêts, Nancy.
J. CAMPREDON, Directeur du Centre technique du Bois, Paris.
J. CHARDENON, Contrôleur principal du S.E.I.T.A., Saint-ines/Oise.
P. MEYER, Conservateur des Eaux et Forêts, Strasbourg.
E. PARANT, Conservateur des Eaux et Forêts, Chaumont.
J. POURTET, Inspecteur principal des Eaux et Forêts, Nancy.
R. REGNIER, Directeur de Recherches agronomiques, Rouen.
M. SILBERBERG, Directeur de la Manufacture d'Allumettes de Macon.

Germany : W. WARSCH, Regierungspräsident, Vorsitzender für Organisation und Verwaltung der Nationalen Pappelkommission, Köln.
F.W. BAUER, Oberlandforstmeister, Professor, Universität, Freiburg i. Br.

BORCHERS, Oberforstmeister, Waldbaureferent im Niedersächsischen Ministerium für Ernährung, Landwirtschaft und Forsten, Hannover.

W. BRANDENBURG, Direktor, Zellstoff-Fabrik Waldhof, Wiesbaden.

DEMNER, Forstmeister, Forstamt Boppard/Rhein.

F. EIDMANN, Oberforstmeister, Forsteinrichtungsamt der Landesforstverwaltung Nordrhein-Westfalen, Lintorf b. Düsseldorf.

F. ELSNER, Reg. Direktor, Bayrisches Ministerium für Ernährung, Landwirtschaft und Forsten, München.

W. ERNST, Reg. Direktor, Bundesministerium für Ernährung, Landwirtschaft und Forsten, Bonn-Duisdorf.

FISCHER-ZACH, Direktor, Zellstoffwerk Weisenbach-Fabrik, Gernsbach/Baden.

FRÖHLICH, Bayerischer Bauernverband, Herzogenaurach, Kr. Höchstädt. a. d. Aisch.

J. GREHN, Bundesanstalt f. Forst- u. Holzwirtschaft, Schmalenbek, bez. Hamburg.

H. HESMER, Professor, Institut für Waldbau der Forstlichen Forschungsanstalt des Landes Nordrhein-Westfalen, Bonn.

H. HESSE, Darmstadt.

H.H. HILF, Professor, Forschungsanstalt Flurholzanbau, Feinbek b. Hamburg.

D. HOFFMANN, Forstassessor, Deutscher Pappelverein, Landesgruppe, Nordrhein-Westfalen, Bonn.

HORNUNG, Oberlandforstmeister, Stuttgart.

KURZ, Landforstmeister, Leiter der Abteilung Forsten im Landwirtschaftsministerium, Baden-Württemberg, Stuttgart.

LEONHARD, Landforstmeister, Forstdirektion, Südbaden.

G. LÜCKE, Forstmeister, Forstamt Harsefeld bez. Hamburg.

O MAHLER, Oberforstmeister, Baden-Baden.

W. MANN, Ministerialdirektor im Bundesministerium für Ernährung, Landwirtschaft und Forsten, Bonn.

R. MÜLLER, Landforstmeister, Wissenschaftliches Institut des Deutschen Pappelvereins, Brühl b. Köln.

MÜLLER-THOMAS, Oberforstmeister, Landesforstverwaltung Rheinland-Pfalz, Mainz.

- OW, Freiherr L. v., Forstmeister, Hauptschriftleiter der
"Allgemeinen Forstzeitschrift", München.
- E. PEIN, Präsident des Verbandes der Forstsamen- und Forst-
pflanzenbetriebe, Halstenbeck, Holstein.
- REISS, Landforstmeister, Forstdirektion Nordbaden, Karls-
ruhe/Baden.
- E. ROHMEDER, Professor, Universität München.
- G. RÜSKAMP, Vorsitzender des Verbandes der Deutschen Pap-
pelbaumschulen, Welte b. Dülmen.
- J. SCHLOTTERER, Forstmeister, Forstamt Kranichstein, Mes-
sel b. Darmstadt.
- B. SCHMITZ-LENDERS, Forstmeister, Düsseldorf-Benrath.
- G. A. SCHÜTZE, Direktor, Zellstoff-Fabrik Waldhof, Haupt-
verwaltung, Wiesbaden.
- SEEGMÜLLER, Forstmeister, Forstamt Germersheim, Bellheim/
Pfalz.
- E. SPIES v. BÜLLESHEIM, Freiherr, Arbeitsgemeinschaft der
deutschen Waldbesitzerverbände, Haus Neuhaus b. Rat-
heim.
- STEHLE, Oberlandforstmeister, Leiter der Forst-Abteilung
im Ministerium für Ernährung, Landwirtschaft und Forst-
en des Landes Nordrhein-Westfalen, Düsseldorf.
- W. TATARSKY, Direktor, Deutsche Zündholzfabriken, Lauen-
burg/Elbe.
- J. VOLKMANN, Forstmeister, Geschäftsführer der Nationalen
Pappelkommission, Bonn.
- G. WALLWITZ, Graf v., Forstdirektion Süd-Baden, Freiburg.
- F. WECHSELBERGER, Landforstmeister, Nagold/Württ.
- O. WEMPER, Landforstmeister, Leiter der Forstabteilung
der Regierung Köln, Bonn.
- WULZ, Landforstmeister, Landwirtschaftsministerium Baden-
Württemberg, Stuttgart.
- H. D. von ZANTHIER, Vertreter des Verbandes der deutschen
Pappelbaumschulen, Burg Kendenich b. Hermühlheim Krs.
Köln.
- ZYCHA, Professor, Biologische Bundesanstalt für Land- und
Forstwirtschaft, Hann.-Münden.

Italy : A. PAVARI, Directeur de la Station de Recherches fores-
tières de Florence.

- G. PICCAROLO, Directeur de l'Institut expérimental pour la Populiculture, Casale Monferrato.
- G. BIANCARDI, Directeur, Association forestière Lombarde, Codogno.
- L. CHIANESE, Inspecteur général de l' "Ente Nazionale per la Cellulosa e la Carta", Rome.
- E. CHIARABBA, S. A. F. F. A., Milan.
- S. CORRARINO, Chef de la Section "Industrie", Ministère de l'Industrie et du Commerce, Rome.
- E. FOLLI, Codogno.
- G. GIORDANO, Professeur à la Faculté Forestière de l'Université de Florence.
- D. MARCHIORI, Chambre de Commerce de Rovigo.
- L. SAVI, "Bonifiche Sarde" Arborea (Cagliari)
- M. SEKAWIN, Institut expérimental pour la Populiculture, Casale Monferrato.

- Netherlands : G. HOUTZAGERS, Professeur à l'Université agricole de Wageningen
- F. W. BURGER, Ingénieur en Chef du Service forestier de l'Etat, Bilthoven.
- H. J. GERRITSEN, "Nederlandsche Hei demaatschappij"
- J. W. HOVE.
- N. van der KOLK, Wood technologist, Paper Mills Van Gelder Zonen N. V., Velsen
- C. H. REUTERSKIÖLD, Agronome, Eindhoven.
- H. van VLOTEN, Directeur du Centre expérimental forestier TNO, Wageningen.
- J. C. van 't WESTHEINDE, s'Heer-Arendskerke, Westhof.
- C. J. J. NINCK BLOK, Van Gelder Zonen N. V., Velsen.

- Spain : J. ELORRIETA, Ingénieur en Chef des Forêts, Institut d'Expériences et de Recherches forestières, Madrid.
- G. HERASO-GONI, Ministère de l'Agriculture, Madrid.
- B. FRONTERA-MARQUES, Ingénieur des Forêts, Saragosse.
- F. JAIME-PANLO, Ministère de l'Agriculture, Saragosse.
- J. M. SANZ-PASTOR, Ingénieur des Forêts, Patrimoine forestier de l'Etat, Madrid.

- Sweden S. WIJKSTRÖM, in charge of the Forest and Timber Dpt. of the Swedish Match Company, Jönköping.

E. UGGLA, "The Swedish Match Company", Jönköping.

Switzerland : E. GAILLARD, Inspecteur fédéral des Forêts, Berne.
P. GRÜNIG, Ingénieur forestier, Institut de Sylviculture
de l'École Polytechnique fédérale, Zürich.

Turkey : H. AKSOY, Direction Générale des Forêts, Ankara.
T. EREN, Direction Générale des Forêts, Ankara.
F. SAATCIOGLU, Professeur à la Faculté forestière d'Istan-
bul.

United Kingdom : J. JOBLING, Assistant Silviculturist, Forest Research Sta-
tion, Alice Holt Lodge, Wrecclesham, Farnham, Surrey.
C. S. BROWN, Eryant and May Ltd., Ballochyle Estate Office,
Sandbank, Dunoon, Argyll.
C. A. GIBBS, Smallwood, Shawford/Hants.
J. F. HARE, English Timber Supply Co., Danbury, Essex.
W. G. PLAYLE, Director, English Timber Supply Co. Ltd., Danbury, Essex.

Note: The names of the official representatives to the International Poplar Com-
mission are underlined.

(b) Non-Member Countries

Chile : O. SCHWEMBER, Ingénieur agronome, Santiago du Chili.

Finland : E. LAITAKARI, Professeur à l'Université d'Helsinki.

Greece : A. GEORGOPOULOS, Conservateur des Forêts, Salonique.

Iran : H. SABETI, Chef de l'Administration des Recherches Fore-
stières, Téhéran.

Ireland : N. MORRIS, Forestry Inspector, Department of Lands, Dublin

Luxembourg : G. RISCHARD, Inspecteur des Forêts, Luxembourg.

Syria : A. H. HELWA, Directeur des Forêts, Damas.

Yugoslavia : L. MARKOVIC, Conseiller forestier, Institut de Recherches
Forestières, Belgrade.

B. OBSERVERS

International Union of Forest Research Organizations:

H. VAN VLOTEN

General Report - ANNEX 2

OUTLINE OF THE REPORT OF NATIONAL COMMISSIONS
to the
INTERNATIONAL POPLAR COMMISSION

OBSERVATION : The term "Poplar" should be interpreted as the whole "genus Populus"

I - General Information

A) Administration and other activities of the National Commission :

(a) Internal activities : Chairmanship, Nominations, Statutes, Meetings, etc.

(b) Outside activities : Publicity, Study Tours, Regional Congresses, etc.

B) Legislation :

Decrees, laws, orders affecting poplar production, trade and consumption, especially those dealing with varietal control.

C) Economic and Statistical data :

- Extent of* :

	<u>on 31 Dec. 1952</u>	<u>on 31 Dec. 1951</u>
Full poplar plantations
Row plantations or individual poplars
Natural poplar stands
Total.

*to be indicated in the manner considered most appropriate by National Commissions (in hectares, kilometres, numbers of trees, etc.)

<u>Production</u> , in cubic metres	<u>in 1952</u>	<u>in 1951</u>
Sawlogs
Veneer logs
Pulpwood
Firewood
Total.

- D) Publications and literature on poplar (including lists of clones cultivated or existing in collections).
- E) Contacts with other countries, members or not of the International Commission (e. g. exchange or despatch of cuttings, etc...).

II - Investigations, Studies and Measures taken with regard to Poplar Cultivation

A) Permanent Programme.

1) General (all sections)

- (a) Measures taken for the application of varietal control;
- (b) Cultivation
 - Experiments under way, including increment studies on selected sites, taking into account the ecological and cultural conditions for row plantations, full plantations and forest stands
- (c) Protection
 - Effect given to the proposals of the Working Group with regard to the exchange of plants and cuttings from the plant protection standpoint.
 - Pests and diseases to be reported, and especially xylophagous insects (see Report of the 4th Session, Chapter III, para. 2, and Report of the 6th Session, Chapter X)
 - Mammals.

2) Black poplars (Aigeiros section)

- (a) Identification and nomenclature
- (b) Genetics and breeding

3) White poplars, including aspens (Leuce section)

- (a) Identification (species, hybrids, geographical races, variation, polyploidy, etc.) and botanical characteristics.
- (b) Artificial regeneration and propagation methods
- (c) Genetics and breeding
- (d) Silvicultural uses

4) Other sections

B) Special studies recommended by the International Commission

- 1) "Black-heart"

- 2) "Cracking" of poplar
- 3) Poplar cultivation on farm lands and grasslands (damage and benefits resulting from such cultivation) and its economic aspects
- 4) Economic aspects of poplar cultivation, with special reference to spacing.

C) Other studies

III--Utilization of Poplar Wood

Laboratory Tests.

Industrial Tests.

General Report - ANNEX 3

A B S T R A C T S

OF THE REPORTS PRESENTED BY MEMBER AND
NON-MEMBER COUNTRIES TO THE SEVENTH
SESSION OF THE INTERNATIONAL COMMISSION

by

G. HOUTZAGERS

Contents

A Austria, Belgium, France, Germany, Italy, Netherlands, Spain, Syria,
Turkey and United Kingdom.

Introduction

General remarks

Varietal control

Pests and diseases

Propagation and cultivation of black poplars (Aigeiros section)

Identification, genetics and breeding

Establishment and tending of plantations

Aspens and white poplars (Leuce section)

Poplar cultivation on farm lands and grasslands

Utilisation of poplar wood

B. Greece and Yugoslavia.

Summaries* of the statements made by the delegates of Greece
and Yugoslavia.

*prepared by the Secretariat.

A. AUSTRIA, BELGIUM, FRANCE, GERMANY, ITALY, NETHERLANDS, SPAIN, SYRIA, TURKEY
and UNITED KINGDOM.

INTRODUCTION

On the occasion of the Seventh Session of the International Poplar Commission held in Germany in 1953, the following countries submitted an annual report on the activities of their National Commissions, and other facts concern

ing poplar cultivation:

Austria	Netherlands
Belgium	Spain
France	Syria
Germany	Turkey
Italy	United Kingdom

In general, only annual reports are summarised hereunder. Exceptions are made for Germany, Spain, Syria and Turkey; in the first case, the organization of the German Poplar Commission is described, and in the others information is given on the actual poplar cultivation.

GENERAL REMARKS

Austria

The National Poplar Commission is composed of representatives of the Chambers of Agriculture and the Provincial Forest Inspectorates.

In order to extend the planting of poplar the Chamber of Agriculture for Styria issued a leaflet and the Austrian Society of Timber Research a booklet on the cultivation of poplar.

An Austrian forest law is expected in the immediate future, containing *inter alia* prescriptions on type choice and inspection.

The importance of poplar cultivation was pointed out in lectures on afforestation in several parts of the country. It is felt that youth associations especially could be increasingly employed for poplar planting.

Belgium

The Belgian Poplar Commission consists of the representatives of the wood industry, nurseries, growers, scientific institutes and the government.

The Commission succeeded in reserving in the "Bulletin de la Société Royale Forestière de Belgique" a section dealing with poplar-growing. With the cooperation of the Commission excursions were organized, one of which was to demonstrate the use of several pruning knives.

The Commission distributed cuttings of some clones to interested poplar growers, and this contributed to the establishment of small "populeta". Growers are under no obligation: the Commission is only authorised to inspect the plants regularly.

The departments of Agriculture and Public Works published a pamphlet on road plantations, including cultivation techniques.

France

It has been forbidden since May 1952 to import poplar plants and cuttings, except for scientific purposes.

A list of poplars cultivated by the Forest Research and Experiment Station has been completed, up to November 1952.

Germany

The National Poplar Commission was established at the beginning of 1952. This Commission may reduce considerably the work of the German Poplar Society.

An important aspect of the work of the Poplar Society was the dissemination of information in several parts of Western Germany. The cellulose industry, in particular, vigorously supported the activities of this Society from the beginning. The National Poplar Commission will work on the same regional basis. The Chairman of the Commission is represented on the board of the Poplar Society.

The Commission consists of the following four committees:

- 1) Administration and general affairs
- 2) Biology (pathology, genetics and breeding, ecology, sociology, taxonomy and cultural techniques).
- 3) Cultivation (among other things responsible for the introduction of varietal control)
- 4) Wood utilization and research (attention will be paid especially to small dimension stock)

Italy

On the initiative of the Directorate of Forests and Mountain Economy the "Istituto di Sperimentazione per la Pioppicoltura" of Casale Monferrato, which has been carrying out many investigations on poplar, was transferred in the autumn of 1952 from the Cartiere Burgo Company to the "Ente Nazionale per la Cellulosa e per la Carta". The object of this transfer was to enlarge the scope of the Istituto's activities in the field of research and experimentation as well as of demonstration.

The Ente has already accomplished a remarkable amount of work and spent one billion lire on setting up large nurseries in the North, Centre and South of Italy, and promoting the planting of poplars. In order to foster experimentation on all pulping species, the Ente has furthermore established a big institute at Rome, where plant pathology, wood technology and cultural techniques will be the major activities.

According to statistics the area of poplar stands in Italy already exceeded 30,000 ha. in 1948, excluding, however, aspen stands and row plantations. Subsequently the area has certainly been increased, but production remains approximately the same as a result of the very short rotation adopted (8 to 10 years)

Netherlands

In the Netherlands the National Poplar Commission is composed of poplar cultivation experts and members of the wood industries, both from private enterprise and from the government.

Until now all felling of poplars had to be previously reported to the State Forest Service, and reforestation of the same area or planting of the same number of trees was compulsory. Since October 1952, however, owners are no longer obliged to replant poplars (and willows) along roads, canals, on arable land and pasture grounds, as a result of a new regulation issued by the Director of the State Forest Service on the initiative of the National Poplar Commission. The purpose of this new rule is to stimulate planting outside the forest, because no farmer would plant poplars on his property knowing beforehand that he would have to replant them after cutting.

The State Forest Service published a leaflet on poplar cultivation. It contains the most important information necessary to a poplar grower, and is distributed free.

Spain

The establishment of the Spanish Poplar Commission took place in January 1953. The Commission forms part of the "Dirección del Patrimonio Forestal del Estado". Several measures were taken to promote national wood production: in 1952 control of wood price was lifted and the government decided to give vigorous financial support to reforestation. For poplars, 20% of the cost of planting is subsidized, 50% advanced as a loan, leaving only 30% to be defrayed by the grower.

The National Poplar Commission is studying planting in catchment areas, for poplar cultivation may of great importance there.

Syria

The exceptionally high wood prices in Syria focussed attention upon the poplar as being a fast growing tree. Economically this genus is already of much importance. The annual production (especially from Populus alba and Populus nigra averages 150,000 cu. m. By improving present plantations this production may be increased to 260,000 cu. m. Poplar cultivation is still primitive and the gov-

ernment forest service hopes to achieve much in the future, e.g. by contacts with foreign countries.

A program has been prepared with the following important points:

- a) establishment of trial plots with a view to keeping under observation introduced clones and studying propagation and cultivation methods;
- b) carrying out of thinning tests as an example to private owners and to study how to increase the average growth;
- c) enlargement of plantations and their better geographical distribution within the country;
- d) inventory of existing stands;
- e) study of the possible uses of poplar wood for industrial purposes;
- f) control of pests and diseases;
- g) establishment of contacts with experts in foreign countries to exchange data, literature, wood samples, cuttings, etc..

Turkey

A National Poplar Commission is being established in Turkey consisting of the representatives of the Directorate of Forests, research institutions, wood industries, cooperatives, poplar growers, and of the municipalities most interested in this particular matter.

Several poplar nurseries have been established in various parts of the country, and almost 8 million plants distributed. It is hoped to be able to distribute 10 million poplars in 1953

United Kingdom

Practically all the research work on poplars in Great Britain is still carried out by the Forestry Commission Research Branch, though there is a steadily increasing interest in poplar cultivation among land owners. Investigations concern especially the laying out and initial tending of plantations.

VARIETAL CONTROL

Varietal control is already practiced in several countries. In general, resistance to bacterial canker is still the main factor governing the choice of hybrids and varieties.

In the NETHERLANDS Populus gelrica, P. marilandica, P. deltoides missouriensis, P. serotina and P. serotina erecta have been found resistant; moderately susceptible are P. regenerata, P. regenerata erecta and P. robusta.

P. brabantica and P. candicans are susceptible.

Because of their susceptibility P. regenerata and P. regenerata erecta have been taken off the list of certified species. P. candicans and P. brabantica are only used as test trees in artificial inoculations. New hybrids are tested for three years before their release for the trade. The work of inspection and certification is carried out by the General Inspection Board of Arboriculture (N A K B).

Inoculations made in May are the most efficient. Different strains of bacteria show varying degrees of virulence. One strain isolated from aspen proved to be more virulent on aspen than a strain isolated from P. marilandica.

In BELGIUM varietal control has been transferred from the "Service Général de Contrôle des Semences et des Plantes Agricoles et Horticoles" (SGC) to the "Office National des Débouchés Agricoles et Horticoles" (ONDAH). The principle of control has not been changed. The following poplars appear in the list of plants subject to control by ONDAH: P. gelrica, P. marilandica, P. robusta, P. serotina, P. serotina erecta. Other species may be added later on approval by the Commission, which the government has specifically set up on the advice of the National Poplar Commission.

Control is carried out in two phases:

- 1) during the first, only plants of correct identification and good origin, quality and health, are approved. Approval is given for one year only.
- 2) the second is before the sale of the plants approved during the first phase. Afterwards a label of guarantee is fixed to the trees.

Another method adopted to stem poplar canker has been to make it compulsory to cut diseased and infected trees. This provision is not directed against canker alone but has a more general scope.

In addition, all imported poplars or parts thereof must be treated with an insecticide against the San José scale. From 15 April to 1 October all import of this material is prohibited.

Fumigation by hydrocyanic acid is often used against the San José scale. Trials have been made under unfavourable conditions in order to find out whether plants are harmed by this treatment. Treated poplars developed, however, in the same way as untreated plants.

Successful results have also been obtained from the artificial inoculation of poplars with bacterial canker in a more biological way. For this purpose the Cladobius populneus scale is used, which as early as 1925 Regnier suspected of being responsible for the spreading of poplar canker. Attempts at infecting susceptible species through the wounds produced by this insect have been successful.

The results of this investigation will be published in the Belgian magazine "Parasitica" in the course of 1953.

In FRANCE, 15,000 cuttings of 10 different clones have been distributed. This material was grown in the nurseries of the National Poplar Commission at Vineuil, near Blois.

In GERMANY a Commission has been established to advise and carry out a control system.

The Forestry Commission of GREAT BRITAIN has now a varietal collection consisting of about 250 clones. Many of them have been inoculated with bacterial slime. A high susceptibility is evident in P. androscoquin P.O.P. 63 (deltoides monilifera x nigra caudina) of Stout and Schreiner, P. tremula x tremuloides from Denmark, and some clones of P. trichocarpa. The McKee poplar also showed high susceptibility in 1952. The continued resistance of a Canadian clone of P. trichocarpa (P. trichocarpa C.F.) is striking. Various clones of P. robusta showed moderate susceptibility, but this should not be taken too seriously as there are many healthy trees of P. robusta in Great Britain.

Cuttings of certified poplar varieties which appear in a list of "standard" varieties, are distributed on a large scale.

In order to avoid the spreading of certain diseases a health control is exercised in the nurseries in SPAIN.

In TURKEY, results obtained with the Italian clones No. 154 and 214 and with the clone Sumer seem to be promising.

PESTS AND DISEASES

Information about bacterial canker has already been given in the preceding paragraph.

Dothichiza populea is especially recorded in the nurseries. In the NETHERLANDS attempts have been made to discover how resistance to this fungus is influenced by low nitrogen and higher potash and phosphate applications. In BELGIUM it has been reported that P. robusta in particular suffers from Dothichiza. In general, attacks in 1952 have not been serious.

The attack by Melampsora rust was not as heavy as usual. In GREAT BRITAIN and the NETHERLANDS observations on clonal resistance and susceptibility were again recorded.

The existence of the fungus Septotinia populiperda has not yet caused alarm

in the NETHERLANDS.

From SYRIA mention is made of Taphrina aurea. This is widespread there, but the damage is not serious. Sometimes Armillaria mellea is present on old trees. Attempts have been made to stem this disease by cutting and burning the infected trees. Isolating furrows have also been dug.

In BELGIUM young plants of P. robusta showed a vascular disease resembling the "brown spot disease". Galleries of Cryptorrhynchus lapathi were found on the attacked trees. This disease (a bacterial one) enters by these channels. Infection stops at 10 to 15 cm. from the ground. As trees surrounded by high grass are mainly attacked, the cutting of grass around poplars may therefore constitute a good preventive measure.

In several places in FRANCE, P. robusta has proved to be susceptible to the fungus Aposphaeria fibricola. The attack is nowhere serious.

The poplar is host to a great number of insect species, but heavy infestations have not yet been recorded. From FRANCE mention is made of Agilus viridus (Coleoptera, Buprestidae), as attacking young newly planted poplars. Plants on the fringe are totally defoliated by Leucoma salicis (Lepidoptera, Bombyxes). Also in ITALY Leucoma is present, but this butterfly is only dangerous for one or two years in the whole rotation period.

In ITALY it is feared that selection only will not in the long run prevent heavy infestations by wood boring insects.

Hyphantria cunea (Lepidoptera, Arctiidae) originally from the United States of America, is spreading in Central Europe. AUSTRIA is expecting attacks on a large scale.

Saperda populnea and S. carcharias are very widespread. In AUSTRIA both species have increased noticeably. S. populnea has been recorded in SYRIA and BELGIUM (P. gelrica); S. carcharias in SPAIN. Besides Saperda, Cossus cossus causes much damage in SPAIN. Plantations in Castile have been infested by Phloemyzus passerini (Aphidinae), attacking the trunks.

In SYRIA young trees have been seriously damaged by the caterpillars of Trochylum apiforme (Lepidoptera, Cossoidea), making galleries in the wood. The same damage is inflicted by the larvae of Cerambyx cerdo (Coleoptera, Phytophaga). Until now no effective measures to lessen damage have been discovered. The larvae of Capnodis tenebrionis (Coleoptera, Buprestidae) also live in the wood (near the roots)

Amongst defoliators, it is worth mentioning that a gall producing aphid and the butterfly Semerinthus populi have been recorded in SYRIA.

During the Sixth Session held in Rome, a report was discussed proposing

measures to prevent the carrying of pests and diseases between countries and continents. The annual report of the U.K. Forestry Commission indicates that nurseries in GREAT BRITAIN are now treated as much as possible in accordance with the provisions laid down in the report mentioned above.

In BELGIUM also these directions are followed. The proposal, however, that not more than fifteen cuttings of certain clones should be imported annually from other continents by each importer is rather criticized. As a permit is required for all imports and exports of plant material, the National Poplar Commissions can be kept informed of all transactions. Quarantine stations where all plants and parts thereof are treated before shipment or immediately after arrival in the country, can easily inform National Commissions of all poplar imports and exports.

PROPAGATION AND CULTIVATION OF BLACK POPLARS

(Aigeiros Section)

Identification, Genetics and Breeding

In FRANCE the cuttings of some poplar resembling *P. nigra* have been collected along the Rhône and Garonne, and are being cultivated together, with a view their identification. A survey has been completed of all clones, varieties etc. existing in France.

An artificial hybrid between *P. nigra betulifolia* and *P. nigra italica* has been produced again at the poplar institute at Grammont (BELGIUM). This hybrid named *P. nigra plantierensis* is the male parent of *P. robusta*.

Also in GREAT BRITAIN a survey of all clones and varieties existing in that country has been completed.

In AUSTRIA a new list of poplars cultivated in the nurseries is being prepared. The Drapal poplar introduced into this country in 1951 as a seedling from a backcross between *P. marilandica* and *P. nigra* has continued to do well even at high elevations (800 m. above sea level)

As a result of the work carried out in ITALY in the field of genetics and breeding, excellent growth properties have been found in the clone 45/51 and in several clones of *P. deltoides angulata*, originating from seed imported directly from the United States (Professor Scott S. Pauley of Harvard University). The tetraploid poplar 438 p has flowered for the first time this year. This variety was obtained by treating a young plant of the male clone I 154 with colchicine. Hybridization by means of the pollen of this tetraploid form is unique, since no artificially raised polyploid poplars producing pollen existed up to now. Contrary

to the diploid clone I 154, which produces only a small quantity of pollen, which is moreover usually sterile, the tetraploid form produces just as much pollen as the normal poplars of the Aigeiros section. It also seems that the pollen of the form 438 p has more food reserve than that of the clone I 154. Pollen grains of 438 p are also bigger than those of I 154. The pollen of this polyploid form has been used in the pollination of three female selections: *P. euramericana* I 214, *P. euramericana* I 37, and *P. euramericana* caroliniano bianco C.

ESTABLISHMENT AND TENDING OF PLANTATIONS

The Forestry Commission Research Branch of GREAT BRITAIN set up some trials, especially on the establishment of plantations. The sample plots were laid down in the winters of 1950 - 51 and 1951 - 52. During the current forest year the work consisted mainly of tending treatments, such as weed suppression around the trees, and carrying out assessments of such characteristics as survival, health, shoot die back, and height increment.

Results so far obtained allow the following provisional conclusions to be drawn:

(i) mulching to a distance of three to four metres from the young plants has had the greatest beneficial effect on height growth, while the fertiliser and mounding treatments applied at the time of planting have had only a negligible effect.

(ii) in a manurial experiment, on three sites, nitrogen has continued to have a greater beneficial effect on height growth than either potash or phosphate, the effect of which was negligible.

(iii) an established experiment at Thetford Chase carried out on stumped one year cuttings of *P. serotina* has shown that plants which were either mounded or received surface soil cultivation in the region of the roots, displayed good height increases. The healthiest plants, however, were those which were either mulched or cultivated.

(iv) the growth and survival of close and wide spaced cuttings was compared but after planting them out at Harling, there were no differences in either survival or height increase between the two types during the growing season. It was not possible to detect any variations in behaviour between plants which had been root pruned during the growing season in the nursery, and those which had not. The experiment showed that there is every reason to believe that on the better poplar sites one year old nursery plants behave as well as older stock, such as stumped one year cuttings, lined out for one or two years, which have nor-

mally been used in establishing plantations in this country.

(v) one of the most successful experiments laid down in 1952, was an investigation into the effects on poplars of heavily liming acid soil before planting. Of the two varieties used, *P. serotina erecta* showed the most favourable reactions. *P. trichocarpa*, the other variety, behaved in a less remarkable manner but gave results encouraging enough to suggest that work along similar lines might be continued on balsam poplars, as well as on black hybrids. The quantity of lime applied raised the pH of the soil of the treated plots from about 4.2 to generally over 6.0.

(vi) an investigation into the effect length of cutting has on subsequent survival and growth in the nursery was carried out during the past season. The cuttings ranged in length from 4 to 9 ins., and 6 lengths were under observation. The heights of shoots from cuttings 4 to 6 ins. in length were appreciably less than the shoots of longer cuttings. There was little difference in height, however, between cuttings of 8 and 9 ins.

(vii) in order to get information on the raising of plants suitable for field planting after only one year in the nursery, an experiment comparing the effects of wider spacing of cuttings (18 x 18 ins.; 18 x 24 ins.; 24 x 24 ins.), with and without pruning, was carried out. Certain plots received a root pruning treatment in August and others in September. All spacings gave rise to particularly tall plants, having the appearance of being more vigorous and sturdy than plants raised at closer spacing. Numerous fibrous roots developed on the severed tips after the August root pruning, while after the September pruning the formation of fibrous roots was much less marked.

(viii) the effect of the drying out of the roots during the period between lifting the plants in the nursery and heeling them in on the planting site was investigated. An experiment has therefore been laid down, using *P. gelrica*, in which plants have been exposed to drying winds, after lifting in the nursery, for periods of from one to sixteen days before being planted. For comparison, plants have been heeled-in in moist soil for 16 days, while others were planted immediately after lifting.

(ix) complete removal of all side branches, or reduction of such branches to short stubs, at time of planting, seems to give better growth in the first year after planting (though not better survival), than no pruning or reduction of the crown volume by the complete removal of some branches only.

The varietal trial at Yardley was assessed at the end of 1952. The most interesting plots, each consisting of 36 trees, are so far those planted from 1937 to 39. Though it is a marginal site for the growth of poplar (heavy intractable clay), good results are shown by *P. carrieri*, *P. rubra* Poiret, *P. laevigata* and

P. berolinensis. These four lead in height and circumference. Other clones which are now doing quite well are *P. marilandica*, *P. robusta*, *P. regenerata* and *P. canescens*. *P. gelrica*, *P. charkowiensis* and a number of Italian selections, particularly numbers 65 and 214, are coming on well in younger plots.

In BELGIUM, it has been found that the sun in the morning has a particularly remarkable effect on the growth of poplars. Along a north-west - south-east directed road, there are two rows of *P. selys*, 43 years old. The row facing the east has an average circumference of 196 cm., the other of 180 cm.. The same can be observed in another row plantation.

A pruning tool has been manufactured in BELGIUM, which enables side branches 2 to 10 metres above the ground to be pruned. The blade is fixed to a long handle, along which a cylindrical hammer driving the blade into the wood may be moved. The whole tool weighs 4.5 to 6 Kgs., is easy to handle, and cuts branches up to 5 cm. in diameter.

ASPENS AND WHITE POPLARS

(Leuce Section)

In FRANCE special attention is being paid to the systematics of this section. Botanical characteristics are described and the systematic position noted of almost all the species of this section occurring in France. It is evident that *P. alba*, as described by Linnaeus, is a collection of forms, in which a northern and a southern group may be distinguished in France, North Africa included. In the western group (*P. megaleuce*, *P. canescens*) the leaves are never deeply lobed. The felt of the short-shoot leaves quickly disappears in the summer. In the southern group, which is also found in the Rhône valley, all leaves are persistently white-felted beneath. This second group may be divided into two sub-groups;

(a) long-shoot leaves deeply lobed (*P. floccosa*, *comesiana*, *nivea*, *palmata*, *epirotica*, *peroneana*)

(b) long-shoot leaves, smaller and less lobed (*P. hickeliana*, *subintegerrima*, "saf-saf" in Morocco).

The representatives of sub-group (a) are drought resistant and seem to stand also a certain degree of salinity in the soil.

Two varieties of *P. tremula* may be distinguished in FRANCE: one growing in the plain with hairy long-shoot leaves and long shoots; and the other growing in the mountains and also in northern Europe, with unhairy leaves and larger

short-shoot leaves. The former is characterised by bad habit, the latter has a much straighter bole.

In rooting aspen cuttings use is made of growth-hormones. Attempts are now being made to make this method suitable for practical purposes.

Several countries are already to cultivate more rapid-grown hybrids of aspens. In the NETHERLANDS crosses have been made within the Dutch varietal range of aspens, also using selected material of other species and from other countries. In general progenies of the Dutch trees are less promising than those with a Polish aspen as one of the parents.

In South Limburg a sample plot of several aspens and hybrids has been laid down. These test plots may also give some indication about the susceptibility to bacterial canker (field infections by interplanted *P. candicans*) and to *Melamp-sora* of the varieties used

In BELGIUM also, good results have been obtained with aspens of Polish origin. Their hybrids with Belgian aspens appear to be resistant even to *Fusicladium*.

Artificial hybridisation could be promoted if young flowering plants were available. In Belgium Mühle Larsen tried to achieve this with hybrids of *P. tremula* x *P. tremuloides*, laying down an experiment on four different sites. Hybrids transplanted on the poorest and driest sites flowered already in the course of the following season. Larsen's conclusion is that mainly external influences rather than the treatment caused the poplars to flower.

In ITALY pollination of *P. alba* with pollen of *P. grandidentata* and *P. tremuloides*, received from the United States, is being carried out. The cross *P. alba* x *P. tremuloides*, in particular, gave rise to rapid growing and so far very vigorous seedlings. White poplars are also being selected to be tested on saline soil, and for this purpose the seed is collected from trees already growing on such soil. The selection is also aimed at identifying easily rooting clones. This work is of particular importance to the Venetian maritime region.

POPLAR CULTIVATION ON FARM LANDS AND GRASSLANDS

In nearly all countries the National Poplar Commissions are endeavouring to interest agriculturists in the growing of poplar. The ITALIAN report mentions that much can be accomplished in cooperation with agriculture, in the Veneto region and in the south of Italy. An increasing interest in poplar cultivation is already shown by the owners of several large farms.

In FRANCE poplar plantations are usually established on grassland. The opinion of agriculturists about the advantages and disadvantages of such cultiva-

tion varies from district to district. In the grassland provinces (Normandy) the poplar is regarded as an enemy of the grass; east of the Parisian basin, however, people are of the opinion that during the first ten years after planting poplars do not significantly decrease the grass yield, and that they can even improve wet ground by lowering the water table.

In view of the lack of reliable data on the benefits and losses to be ascribed to poplars in agricultural districts, an investigation has been started in the NETHERLANDS to determine the influence of poplars, interplanted with shrubs, on the yield and quality of the produce of adjacent cultivated land.

UTILISATION OF POPLAR WOOD

The principal outlets for poplar timber are the veneer, match, and paper industries. In the NETHERLANDS the wooden shoe industry may be added.

Several countries find it difficult to dispose profitably of assortments too small for the veneer industry. In GREAT BRITAIN there has been an important development in the market for such categories, as a result of the increasing production of boxboards. In GERMANY an ad hoc Commission is trying to find uses for such small dimension stock.

The main use for small assortments and wood waste will, however, be in the manufacture of paper. In FRANCE, in particular, investigations are being conducted to discover a good method for breaking down wood fibres for this purpose, both as regards roundwood and wood waste.

Poplar roundwood may be converted into pulp either by the groundwood or the chemigroundwood process. By the first method a rather strong stock is obtained, if the wood is steamed before grinding. In GERMANY this method has already been applied in the manufacture of cardboard.

The fibres of hardwoods are shorter than those of softwoods, and therefore less tear-resistant. In ITALY the speed of the paper machines is not high, and the amount of poplar pulp in making newsprint and printing paper may vary from 10 to 40%. In FRANCE, however, the speed of the paper machines must be higher to yield a profit, and the proportion of poplar pulp may not, therefore, be greater than 15 to 20% when making newsprint.

No hardwood pulp has been used until now in the UNITED STATES for the manufacture of newsprint. Digestion by means of a soda-sulphur solution gave such satisfactory results that the use of a small percentage of hardwood is now being considered. The pulp produced in the United States by the soda-sulphur system is used mainly in the manufacture of corrugated board. In FRANCE straw is

used as raw material instead.

Digestion of wood waste is only done chemically.

As very satisfactory results have been obtained by the "Kraft" process, producing a pulp whose strength is fairly high, an increased use of poplar wood for the manufacture of paper is now possible. In the UNITED STATES paper is already manufactured this way on a large scale, using up to 30% of poplar.

In FRANCE the Centre Technique du Bois coordinates all wood investigations. The 1953 research program is already well under way. *P. robusta* has been chosen to carry out a general investigation of its wood properties, as it is rather widespread, not difficult to identify, and its characteristic change little from one site to another. In addition some investigations will be carried out with *P. virginiana* or *P. regenerata*, which are fairly representative clones.

In general, each sample consists of one butt log, four metres in length, and another log just as long; the uppermost 70 cm. of the butt log are cut away and used for veneer trials. From the bottom of the other log two discs, 15 cm. thick, serve for anatomical and chemical investigations. What is left of the logs is used for sawing trials and the resulting heartwood boards are mechanically tested.

In BELGIUM the results of technological investigations with *P. marilandica*, *P. serotina* and *P. regenerata* have been published. The conclusion drawn is that not the variety but growth conditions such as trunk and crown form, regularity of growth rings, etc. are of primary importance.

Samples of *P. marilandica* came from naturally pruned trees which had not been exposed to the wind. Samples of *P. serotina*, on the contrary, came from trees grown on very wet ground and on the fringe of the forest. Thus the wind had an influence on their growth. As a result the samples of *P. serotina* showed several undesirable properties: cross grain, loose knots, blue coloured wood, etc. *P. marilandica* produced good timber. The wood of *P. regenerata*, the samples of which were taken from trees grown under circumstances similar to those of *P. serotina*, was of only mediocre quality, and inferior in any case to that of *P. serotina*.

In the NETHERLANDS much attention is being paid to tension wood of poplars. Its chemical composition has been investigated and it appears that the percentage of cellulose is higher. Its nature, however, lowers the quality of the pulp greatly and thus annuls the advantage of the higher yield.

The final report of an extensive investigation into the qualities of *P. marilandica* is almost complete. Studies on tension wood, black heart, and wet zones have been continued, especially with *P. gelrica*. Five logs of *P. marilandica*

ica from each of five different sites have been worked in a match factory, a veneer manufacturing plant, and in a wooden shoe factory. Reports of all these experiments have been submitted and coordinated. The same has been done with ten logs of P. gelrica from each of three different sites.

GREECE AND YUGOSLAVIA

Greece

Efforts are being increased in Greece to utilise lands suitable for the cultivation of Euramerican poplars, and each year poplar plants are distributed to the inhabitants of the plains for planting out on farm lands. It is estimated that the plantations established will produce 50,000 m³ of wood.

The Italian clones 154, 214, 262 and 455 have recently been introduced for experimental purposes, together with some clones of French origin, which have until now given good results.

As far as diseases are concerned, no trace of either fungi or bacteria is to be seen. On the other hand, a great many pests occur, favoured perhaps by the climate. Poplars in rows in particular, suffer from the attacks of xylophagous insects.

Yugoslavia

In North Yugoslavia, much State owned land by the rivers which is now under forest, particularly salicaceous species, is very favourable to poplar cultivation. These lands on the borders of the Danube and of the Drave cover in area of about 100,000 hectares. Other regions of Yugoslavia are also very important for the development of poplar.

The limited extend of softwood forests forces Yugoslavia to undertake intensive poplar cultivation, in order to meet the demand for soft timber.

Spontaneous poplars are now being studied. There are white poplars, aspens and black poplars. It is also worth mentioning a hybrid between Populus alba and Populus tremula called Populus bachofeni, which is very near to an aspen.

There are often white poplars in valleys in which black poplars can be cultivated. Three distinct groups can be observed: a southern group with fairly small and not deeply lobed leaves, and thick white felt, which is common in the Vardar valley mixed with Platanus orientalis; a group with very large and palmately lobed long-shoot leaves, and with persistently felted short-shoot leaves, existing in Bosnia and in Herzegovina; a group of poplars growing in the walleys of the Danube and the Drave of the Populus canescens type.

All these white poplars are very important for their adaptability, their resistance to drought, pests and diseases, and their vigour in setting root suckers.

The black poplar (*P. nigra* L.) grows everywhere, in the mountain valleys as well as in the large river valleys of the Pannonia plain. It shows a great ecological adaptability and remarkable variations by reason of the wide area it covers.

Cultivated poplars belong exclusively to the *Algeiros* section and are of minor importance. *Populus nigra* L. has two forms: one male form, *P. nigra* L. f. *italica*, planted in rows along roads and in parks in the north of the country, and a female form in the south, in Macedonia, in south Serbia, in Montenegro, in Dalmatia and in Bosnia Herzegovina, far superior to the former in rapidity of growth and habit. This last variety is often cultivated in rows, either along roads, or beside streams and on agricultural lands. The bark of this poplar stays smooth and very white for a long time, and its trunk is perfectly cylindrical.

There are also poplar hybrids over the whole country belonging to the "x *Populus euramericana* (Dode) Guinier" group.

Poplars of the *Tacamahaca* section have been introduced after the last war.

The wood of poplar has been utilized for a long time, but it is only since 1947 that attempts have been made to improve poplar cultivation because of the growing demands for soft timber. Numerous nurseries have been set up and in 1952 an expert, Mr. Pourtet, was called upon through the FAO to advise the forest services.

The forest restoration plan for the period 1952-1971 aims at creating poplar plantations over an area of 39,000 hectares and introducing poplars into degraded forests. The research institutes are simultaneously working on the identification of indigenous and introduced types, ecological studies and the improvement of cultivation techniques.

REPORT ON THE UTILIZATION OF POPLAR WOOD

The Working Group on the Utilization of Poplar Wood did not meet officially during the Session. However, its chairman Prof. GIORDANO, called an unofficial meeting of the delegates of countries interested in utilization problems. This Group considered the chapters of the National Commissions' reports on utilization and heard suggestions from countries non-members of the Commission.

Delegates from Italy, France, Belgium, Syria, Turkey, the Netherlands, Germany, Spain, Yugoslavia, Switzerland and Greece attended the meeting.

Following this unofficial meeting, the report given below was submitted to the Commission by Prof. Giordano.

The reports submitted by the various countries show the great importance of the industrial tests, which definitely must be conducted parallel to the laboratory tests. Only thus can the advisability be determined of cultivating one clone rather than another; obviously, it is not enough to produce a great quantity of wood, but the most advantageous categories must be obtained.

The experts of the National Commissions have not yet been able to produce positive results, but their work and activities indicate that the delay will not be long.

During the unofficial meeting, which took place before the Commission's session, certain points were emphasized, namely:

- (a) the caution with which the preliminary provisional results must be announced;
- (b) the need for always indicating, along with these results, such factors as environment, climate, soil, etc., together with particulars on the stands, row plantations, etc. from which the trees have been taken;
- (c) the need for improving industrial tests: each country should inform the various national commissions of the methods adopted;
- (d) the importance of a description of defects, in order that all concerned may have a standard nomenclature; if possible also, distribution of samples;
- (e) the extreme importance of research on white poplars and aspens, true forest species, and on the introduction into the southern European countries of the types common in Syria, Iran, Irak, Turkey, and North Africa;
- (f) since poplar plantations are always located on flat open country, the

conditions are particularly favorable for using machinery both for planting and for felling, skidding and loading. This side of the work should, therefore, be given all the attention it deserves. It would in fact be very useful if results could be compared at the next meeting, even though on a provisional basis, as much valuable information for a better return from poplar cultivation could thus be obtained.

General Report - ANNEX 5

NOMENCLATURE FOR POPLARS

APPLICATION OF THE DECISIONS OF THE INTERNATIONAL

BOTANICAL CONGRESS AT STOCKHOLM

by

Ph. GUINIER

In 1950 the International Poplar Commission adopted a poplar nomenclature which conformed to the botanical and horticultural nomenclature rules established by the International Botanical Congress at Vienna (1905) and a Cambridge (1933).

The 7th International Botanical Congress held at Stockholm in July 1950 adopted an international code of botanical nomenclature which amends certain rules previously accepted, particularly in regard to cultivated plants.

Consequently, the nomenclature for the poplar should be made to conform to the new rules formulated in subsection 7 and Appendix III of that Code.

The following are the main points to be remembered:

(1) The nomenclature rules for plants growing wild are different from those for plants originating or maintained in cultivation. A distinction is made between the *variety* (var.) which is a variation existing in the wild state and the *cultivar* (cv.) which is "a variation unknown in the wild state or whose wild specimens are not sufficiently numerous for it to be worth recognizing by botanists"

(2) The varieties are designated by Latin names. The cultivars are designated by "fanciful epithets, generally in common language, as remote as possible from the Latin names of species or varieties" "A cultivar name should be differentiated typographically from a botanical epithet, preferably by inverted commas". This is obligatory, as of 1 January 1953, for the denomination of newly described cultivars. However, "when a name of Latin form given previously to a cultivar has come into general use, it ought not to be discarded, but treated as a cultivar name. Thus it should be printed in inverted commas to distinguish it from a botanical epithet"

(3) The clone is defined as "a group of individuals essentially uniform, derived from a common parent by asexual reproduction". The epithet is preceded by the term clone, abbreviated to: cl.

Further, the International Code of Nomenclature stipulates, in Appendix II, that, when hybrids are designated by specific double names, "all the progeny

of crosses between the same parent species shall be given the same double name", and that "the double name shall be preceded by the multiplication sign".

There will be no difficulty in applying these new rules to poplar nomenclature. The principles which have inspired the International Poplar Commission coincide with those recognized at Stockholm.

The measures to be adopted are:

(1) Replacement of the term forma by the term cultivar and use of the term clone or its abbreviation before the epithet.

(2) Retention of the epithets previously adopted, taking advantage especially of the provision which allows the Latin epithets in general use to be kept, but without underlining.

Consequently:

Populus euramericana forma robusta

will now be written:

x Populus euramericana cv. cl. "robusta".

Likewise the following formula will be adopted:

x Populus euramericana cv. "serotina" cl. Champagne.

It will still be possible to designate clones by letters and numbers, which is a common practice in the nomenclature of certain cultivated plants, particularly the vine. Example:

x Populus euramericana cv. cl. "I 214".

It is to be noted that there may be a variety and a cultivar of the same poplar species designated by the same epithet. Thus, Populus deltoides var. missouriensis designates the variety growing in the wild state in the United States and comprises plants of both sexes. On the other hand, Populus deltoides cv. "missouriensis" designates the male clone imported into Holland and propagated in that country.

INTERNATIONAL CODE OF NOMENCLATURE FOR CULTIVATED PLANTS

by

T. R. PEACE

At the Sixth International Horticultural Congress held in London in September 1952, a code of nomenclature for cultivated plants was drawn up by a representative sub-committee, which included members from the Netherlands, United States, Switzerland, France, Sweden, Denmark, Belgium, Germany, Canada, Norway, and the United Kingdom, and approved by the Congress as a whole. The code was based on one drawn up by a sub-committee of the International Botanical Congress at Stockholm in 1950. This, after some further modification, was published in the *Journal of the Royal Horticultural Society* 77, pp. 160-72, May 1952. Very considerable alterations were made, however, at the London meeting. Unfortunately the final proposals have not yet been published (they will appear shortly, also I believe in the R.H.S. Journal); but in the meantime a proof copy has been made available to me by the kindness of the secretary of the London Committee, Dr. W. T. Stearn. I had honour of representing the Forestry Commission, as an observer, at the meetings of the Committee.

It is obvious that many of the recommendations made in the Code will affect the naming of poplars, particularly new hybrids, and I would like to suggest that the International Poplar Commission should agree, subject to further study of the Code on its publication, to recommend it to member organizations as a basis for the future naming of poplars. The proof copy is in the hands of Mr. Jobling, and is available for brief loan to any member of the Poplar Commission who wishes to read it.

Here I am only going to call attention to certain specific points, where the Code touches very directly on our work. For a proper understanding of the Code and its application to the naming of poplars, a study of the Code as a whole is required.

Firstly, recommendations were made on the registration of names; Art. 5, Note 2 reads "It is recommended that for each genus, or group of related genera, in which cultivars are numerous, there should be a recognized International Registration Authority (a) to compile, maintain and publish an International Register of the names of the cultivars, making full use of existing work, and subsequently to publish such supplements and new editions as circumstances may require; (b) to register only names which conform to this Code; and (c) to persuade raisers,

introducers and others concerned with the distribution of plants to use only names which conform to this Code. Such an international register may be adopted later as the starting point for the nomenclature of the group (see Art. C. 12)". I would suggest that the International Poplar Commission should consider the establishment of a registration authority as one of its functions.

Most of the recommendations on the "Formation and Use of Cultivar Names" are applicable to the naming of poplars. Particular attention is drawn to Article 23 (e), which reads "numerals either alone or attached to a word, except as custom in certain groups dictates otherwise; in general, numerals are to be regarded as useful temporary designations while cultivars are under trial. A cultivar-name is not to be substituted for such a designation without the permission of the raiser or introducer. Example: Pea 'Danisholt 710/41', named Pea 'Emigrant' when put in commerce".

The two sections of most direct importance are, however, G. "Names of Hybrids Originating in Cultivation", and H. "Names of Latin form applied to Hybrids in General". These are quoted below, not from the full text of the Code, but from the summary which will accompany it when it is published. From this members will see that they are very applicable to the naming of poplars.

SECTION G: NAMES OF HYBRIDS ORIGINATING IN CULTIVATION

Art. C. 24. The first word in the name of a hybrid is a generic name if the parents belong to the same genus; if the parents belong to different genera the first word is the name of a hybrid genus. The last part of name of a hybrid is a cultivar-name applying to a single hybrid form, and is subject to the regulations of this Code.

Parentage may be indicated by a formula placed between the generic and cultivar-names, e.g. *Rubus (rusticana inermis x thyrsiger)* 'Merton Thornless'. Collective designations (in common language or in Latin) of hybrid groups also may be used; e.g. Rose (Hybrid Tea) 'Richmond', *Viburnum x bodnantense* 'Dawn'.

For brevity, or when the exact parentage is unknown, the cultivar-name may directly follow the name of the genus, e.g. *Iris* 'Ambassadeur'.

Art. C. 25. Designation of hybrid groups by means of formulae, or collective names in Latin form, is governed by the regulations of the International Code of Botanical Nomenclature. The following parallel regulations have been set up for use with groups designated primarily in common language.

(a) Hybrids are denoted by a formula consisting of the names of the parents in alphabetical order linked by the multiplication sign, e.g. *Rhododendron* 'Adonis' x 'Chanticleer'. Even in groups where it is customary to

place the name of the female first, the sex of the parents should be clearly indicated.

(b) A collective designation may be substituted for the formula. Thus, the collective designation *Camellia x williamsii* covers all the cultivars (e.g. 'Donation', 'Mary Christian', etc.) derived from *C. japonica* x *C. saluensis*. When the collective designation is a phrase in common language it may be expedient to place it in parenthesis, e.g. *Lilium* (Bellingham Hybrids) 'Shuksan'; here 'Shuksan' the cultivar-name, belongs to only one hybrid form (clone) of the Bellingham Hybrids, which have been derived from *L. humboldtii* x *L. pardalinum*.

(c) Among orchid hybrids the word 'GreX' (or its abbreviation 'G') should be used in conjunction with a name to designate a collective group, e.g. *Cattleya* 'Fabia GreX' covers all hybrids of *C. dowiana* x *C. labiata*, of which *Cattleya* (Fabia G.) 'Prince of Wales' is a clone.

(d) When the parentage of a flask or pan of hybrid orchid seedlings is unknown the collective designation of the group is marked 'ign.', the abbreviation of the Latin word *ignota* (unknown), e.g. *Cymbidium* 'Grosvenor GreX ign.'

(e) A cultivar-name which has been used in a collective sense should be converted into a collective designation by adding a suitable word, e.g. *Rhododendron* 'Jalisco' var. 'Eclipse' is not legitimate, but should be amended to *Rhododendron* (Jalisco Hybrids) 'Eclipse' or *Rh.* (Jalisco GreX) 'Eclipse'.

(f) The use of the name of only one parent species to designate a hybrid group should be avoided. Designations such as *Rhododendron* 'Fortunei Hybrids' should be used only when the other parent is unknown or complex and the group has well-marked characters derived from the species indicated.

(g) A collective name of Latin form is subject to the rules laid down in the Botanical Code, e.g. the original description must be in the Latin language, etc.

(h) If the collective name is not of Latin form (i.e. in common language) no Latin description is required. Publication of such names then follows the provisions of this Code regarding the naming of cultivars.

(j) A word formed from parts of the Latin names of the parental species may be used as a collective designation, but its publication must be accompanied by a description in Latin.

(k) In major hybrid complexes subsidiary 'groups' (convarieties) may sometimes be designated, e.g. the 'Cactus group' of the common garden dahlia, or the 'Darwin group' of tulips.

SECTION H : NAMES OF LATIN FORM APPLIED TO HYBRIDS IN GENERAL

Art. C. 26. When names of Latin form are to be given to hybrids, procedure should follow the rules laid in the International Code of Botanical Nomenclature, Appendix II".

Several other sections, which cannot be quoted here, are of direct value in the naming of poplars. In view of the obvious importance of this Code to the orderly naming of poplars, I would like to propose, through Mr. Jobling, that this meeting of the International Poplar Commission should express its general interest in and, subject to further study, approval of the "International Code of Nomenclature for Cultivated Plants", and that it should recommend this Code to the attention of member organizations. Furthermore I would like to propose that a sub-committee be set up to study the Code, as soon as it is properly published, and to make recommendations as to the method of its adoption, and also as to the best means of establishing registration of poplar names. Their report should be submitted to the next meeting of the International Poplar Commission.

General Report - ANNEX 7

STATUTES

Article 1

Establishment of the Commission

The International Poplar Commission (hereinafter referred to as the "Commission") is hereby established under the aegis of the Food and Agriculture Organization. It shall function as a technical committee of the Organization and comprise countries interested in poplar cultivation. The Commission shall constitute an assembly of the representatives of National Commissions (see Article 4).

Article 2

Aims of the Commission

(a) The Commission is a commission of experts, each member speaking on behalf of his National Commission, the being to promote international collaboration in the study of all scientific, technical and economic questions relating to poplar cultivation;

(b) The Commission operates mainly by:

- promoting exchange of ideas and material between research workers, producers and users;
- arranging joint research programmes in collaboration with the International Union of Forest Research Organizations;
- stimulating the organization of congresses combined with study tours;
- making suggestions to Member Governments and recommendations to National Commissions.

(c) Should the Commission consider that intergovernmental action is required, the Chairman shall, in consultation with the Director of the Forestry Division of FAO, examine the possibility of placing the question on the Agenda of the Conference of FAO or of the Regional Forestry Commissions.

Article 3

Membership

(a) The Commission may by a two-thirds majority of all members decide to

admit as an additional member of the Commission any nation which will accept the statutes as in force at the time of admission. They must undertake to set up, by whatever procedure they may deem most appropriate, a National Commission on which research institutions, producers and users are represented.

(b) The following countries which were represented at the Conference held in Paris from 19 to 26 April, 1947 and which accept the present statutes, shall ipso facto be original members of the Commission: Belgium, France, Italy, Netherlands, Sweden, Switzerland and the United Kingdom.

Article 4

Representation on the Commission

Each member country shall be represented on the Commission by a delegate designated by the National Commission. Each delegate may be accompanied by as many experts as the National Commission concerned may deem desirable.

Article 5

Participation of Experts

The Chairman may invite an unlimited number of qualified experts to take part in the work of the Commission. Should such experts be nationals of member countries of the Commission, the National Commissions concerned must be consulted.

Article 6

Working Groups and Regional Bodies

The Commission may set up either ad hoc or standing working groups for the consideration of special questions. It may also set up regional subcommissions to consider the problems peculiar to each region.

Article 7

Officers

The officers of the Commission shall comprise a Chairman, a Vice-Chairman and a Secretary.

The Chairman and the Vice-Chairman shall be appointed by the Commission for

a term of four years.

The functions of Secretary shall be entrusted to an official of the Forestry Division of FAO, appointed by the Commission on the proposal of the Director of the Forestry Division of that Organization.

Article 8

Standing Executive Committee

The study of technical questions and the administration of the Commission shall be entrusted to a Standing Executive Committee comprising the Chairman, the Vice-Chairman, a representative of the Director-General of FAO, and 9 members. The 9 members shall be appointed for a term of 6 years by the Commission and selected for their personal qualifications. One-third of the membership shall be renewed every two years but individuals shall be eligible for re-election.

Article 9

Headquarters of the Commission

The Commission shall have its headquarters at the headquarters of the FAO Forestry Division.

Article 10

Sessions

The Commission shall meet once every two years in the spring. The date, place and agenda of the Commission's sessions shall be established in conformity with the Rules of Procedure.

Article 11

Budget and Finance

The cost of organizing the sessions of the Commission and of publishing the records shall be borne by the host country.

The Secretariat's expenses shall be borne by the Forestry Division of FAO

Each National Commission shall have its own budget and defray its own expenses, including the travel expenses of its representatives and the cost of

publishing its records.

Article 12

Amendment of the Statutes

The present statutes may be amended on the proposal of a member of the Commission. Proposed amendments must obtain the approval of two-thirds of the members of the Commission.

General Report - ANNEX 8

RULES OF PROCEDURE

CHAPTER I - SESSIONS

- Rule 1 - The International Poplar Commission (hereinafter referred to as the "Commission") shall meet once every two years in the spring, at a date established at the preceding session, or on the call of its Chairman.
- Rule 2 - The place of meeting shall be decided by the Chairman, after consultation with the Standing Executive Committee.
- Rule 3 - Notices convening a session, together with the provisional agenda, shall be sent out at least one month before the opening of the session.
- Rule 4 - The Commission shall invite those experts it considers necessary for its work to attend its meetings. It may also invite representatives of international specialized agencies. FAO shall invariably be invited.

CHAPTER II - AGENDA

- Rule 5 - The provisional agenda for each session shall be drafted by the Secretariat in agreement with the Chairman.
- Rule 6 - The provisional agenda to be submitted for the Commission's approval shall include:
- (a) questions raised at the previous session of the Commission;
 - (b) questions proposed by the Standing Executive Committee;
 - (c) questions proposed by FAO;
 - (d) questions proposed by any member of the Commission;
 - (e) all questions which the Chairman or the Secretariat deem it advisable to include.
- Rule 7 - The Commission may amend its agenda at any time.

CHAPTER III - OFFICERS

- Rule 8 - At its first session the Commission shall elect a Chairman and a Vice-Chairman, who will remain in office until their successors are elected. They are eligible for re-election.
- Rule 9 - The Vice-Chairman, acting as Chairman, shall have the same rights and duties as the Chairman.

Rule 10 - The Chairman, or the Vice-Chairman acting as Chairman, shall participate in the discussions in that capacity and not as the representative of a member country. The Commission shall therefore allow an alternate to represent the member country concerned at the sessions of the Commission and to exercise the right to vote.

CHAPTER IV - STANDING EXECUTIVE COMMITTEE

Rule 11 - The Chairman, Vice-Chairman and Secretary of the Commission shall respectively be Chairman, Vice-Chairman and Secretary of the Standing Executive Committee.

At the first elections of the 9 members, 3 shall be elected for 2 years, 3 for 4 years, and the other 3 for 6 years.

Rule 12 - The Standing Executive Committee shall be convened by its Chairman.

Rule 13 - The program of work of the Standing Executive Committee shall be outlined by the Commission.

CHAPTER V - SECRETARIAT

Rule 14 - The official of the Forestry Division of FAO appointed as Secretary may, if prevented from performing his functions, be replaced by another official of FAO, subject to the approval of the Chairman and of the Director of the Forestry Division of FAO.

Rule 15 - The Secretary is responsible for the organization of sessions.

Rule 16 - The functions of the Secretariat shall be defined in a protocol drawn up by the Chairman of the Commission and the Director of the Forestry Division of FAO.

CHAPTER VI - CONDUCT OF BUSINESS

Rule 17 - In addition to exercising such powers as are conferred upon him elsewhere by these Rules, the Chairman shall declare the opening and closing of each meeting of the Commission, direct the discussions, ensure observance of these Rules, accord the right to speak, put questions to the vote and announce decisions.

Rule 18 - Meetings shall be held in private, unless the Commission decide otherwise.

CHAPTER VII - VOTING

- Rule 19 - Each member country of the Commission shall have one vote.
- Rule 20 - Decisions of the Commission shall be made by a two-thirds majority of the members present and voting.
- Rule 21 - The Chairman shall put to the vote particularly the admission of new members and the recommendations to be submitted to FAO.
- Rule 22 - As a general rule, the Commission shall vote by show of hands. On the request of a member, a roll-call vote may be taken in the French alphabetical order of the names of member countries.
- Rule 23 - Elections shall be decided by secret ballot.

CHAPTER VIII - LANGUAGES

- Rule 24 - French shall be the official language of the Commission. The working languages shall be French and English.
- Rule 25 - Communications in one of the working languages shall be translated into the other.

CHAPTER IX - SUMMARY RECORDS AND REPORTS

- Rule 26 - The summary records and final report shall be prepared by the Secretariat in French and despatched as soon as possible to the members of the Commission, as well as to the experts and representatives of the organizations participating in the session.
- Rule 27 - On the proposal of a member of the Commission adopted by the Commission a Rapporteur may be appointed to draft the final report.

CHAPTER X - NATIONAL COMMISSIONS

- Rule 28 - Each National Commission shall establish its own rules of procedure and the agenda for its meetings.

CHAPTER XI - AMENDMENT OF THE RULES OF PROCEDURE

- Rule 29 - Any amendment of these Rules of Procedure shall be subject to a vote by the Commission.

General Report - ANNEX 9

LIST OF THE DOCUMENTS SUBMITTED AND
STATEMENTS MADE IN THE COURSE OF THE
SEVENTH SESSION

A. Documents Prepared or Duplicated by the Secretariat

- Provisional Agenda for the Seventh Session of the Commission (Doc. FAO/CIP/63)
- Report on the Activities of the Secretariat (Doc. FAO/CIP/64)
- Secretariat Note on the Outline Proposed for the National Commissions' Reports (Doc. FAO/CIP/65)
- Note of the Secretariat on the Revision of the Statutes and Rules of Procedure (Doc. FAO/CIP/66)
- Reports on the Activities of National Commissions: FRANCE (Doc. FAO/CIP/67-A)
- idem: Utilisation du Bois de Peuplier (Doc. FAO/CIP/67-A Add. 1) (French only)
- Liste des Peupliers Cultivés par la Station de Recherches et d'Expériences forestières (Annex to Doc. FAO/CIP/67-A) (French only)
- Reports on the Activities of National Commissions: UNITED KINGDOM (Doc. FAO/CIP/67-B)
- Reports on the Activities of National Commissions: SWITZERLAND (Doc. FAO/CIP/67-C) (French only)
- "A Brief Note on the Design of Poplar Experiments" by Ernest J. Schreiner (Doc. FAO/CIP/68) (English only)
- "Directions for the Survey of Poplar Areal Plots" by the National Poplar Commission of the Netherlands (Doc. FAO/53/8/6312) (English only)
- "La Culture du Peuplier dans la Venetie et le Developpement qu'on peut s'attendre dans l'avenir", submitted by the Italian Delegation (Doc. FAO/53/4/3316) (French only)
- "Measurement of Poplar - Sample Plots - National Poplar Commission of the Netherlands", by Messrs. G. HOUTZAGERS and F. W. BÜRGER (Doc. FAO/52/11/7790) (English only)

B. Documents presented by Delegations

- "Notes préliminaires à la connaissance de quelques types de peupliers cultivés en Italie" presented by "Ente Nazionale per la Cellulosa e la Carta"
- "Rapport d'Activité de la Commission Nationale Allemande du Peuplier", by the German delegation.
- "Bericht der Nationalen Pappelkommission" (Report on the Activities of the National Poplar Commission of Austria), by the Austrian delegation.
- "Rapport d'activité de la Commission Nationale Espagnole du Peuplier", by Mr. Herase, Permanent Secretary of the National Poplar Commission of Spain.
- "Rapport de la Commission Nationale Italienne du Peuplier", by the Italian delegation.
- "Rapport des activités de la Commission Nationale Belge du Peuplier", by the Belgian delegation.
- "The National Poplar Commission of the Netherlands - Activities in 1952", by Mr. G. Houtzagers.
- "Les travaux sur la Culture du Peuplier en Turquie", by the Turkish delegation.
- "Note sur la Culture des Peupliers en Yougoslavie", by Mr. L. Markovic.
- "La Populiculture en Syrie", by Mr. A. Hiloué.
- "International Code of Nomenclature for Cultivated Plants", by Mr. T.R. Peace.
- "Effect of Mercuric Chloride on Dormant Cuttings of Hybrid Poplars during Storage", by Alma M. Waterman, presented by the U.K. delegation.

C. Verbal Statements (text left with the Secretariat)

- "Note sur le Développement de la Populiculture en Grèce", by Mr. A. Georgopoulos.
- "Note sur l'emploi du Peuplier dans le Reboisement en Espagne", by Mr. José Elorrieta.

Note: The documents listed under "A" may be obtained from the Secretariat of the International Poplar Commission, in either English or French, except when it is otherwise indicated.

B. SPECIAL REPORTS

1. "Report on Poplar Diseases and Pests observed during the Study Tour in West
ern Germany (30 April - 8 May 1953)", by R. REGNIER, H. van VLOTEN and H.
ZYCHA.

2. Reports on Poplar Identification and Cultivation:
 - (a) "Poplar Identification and Cultivation in the Baden Region", by F. W.
BAUER.
 - (b) "Extensive and Intensive Poplar Cultivation", by G. PICCAROLO.
 - (c) "Observations on Poplar Cultivation in the Baden Region", by A. HERBI
GNAT.

REPORT ON POPLAR DISEASES AND PESTS

OBSERVED DURING THE STUDY TOUR IN

WESTERN GERMANY

(30 April - 8 May 1953)

by

R. REGNIER, H. van VLOTEN and H. ZYCHA

On the whole, the poplar nurseries and plantations in West Germany appear to be in excellent condition. The most remarkable fact is the complete absence of bacterial canker from the stands of x *P. euramericana* cv. "regenerata" in the Karlsruhe and lignite districts west of Cologne, whereas this type is normally susceptible in the north of France, in Belgium and Holland.

Pests

From the entomological point of view, the situation in the districts visited also seems satisfactory, although at the time the study tour was conducted it was difficult to predict to what extent certain pests would multiply.

In the Westphalian nurseries we noted the occurrence of some defoliators (*Melasma*, *Phyllodecta*), but they were very few in number. Likewise the *Compsidium populneum* (= *Saperda populnea*) was not much in evidence.

As regards the large poplar longhorn beetle (*Saperda sarcharias*) it is astonishing that it is not common in the poplar forests of Harff along the right bank of the Rhine near Karlsruhe. It is quite feasible that the nature of the soil, the vigorous growth of the trees and the behavior of the poplar as a forest tree prevent this serious pest from developing. The odd logs we came across in the field were not infested.

Diseases

While we did not find bacterial canker, we noticed, especially in the Cologne Region, three diseases that held our attention:

- (i) "Rindentod" and *Dothichiza populea* Sacc. et Br.
 - (ii) "Braunfleckenbrand" and "bacterial infection"
 - (iii) Blackheart.
- (i) "Rindentod" and *Dothichiza populea* Sacc. et Br.

In the 'Hausenbuschgarten' of the Scientific Poplar-growing Institute, Brühl, near Cologne, directed by Dr. R. Müller, we saw experiments on resistance to drought and *Dothichiza* being carried out on 4 clones of x *P. euramericana* cv. "Leipzig".

"Rema", "Bachelieri" and "regenerata" Harff.

The one-year old plants are subjected to artificial drought conditions; further, in some plots branches carrying sporophores of various fungi, mainly Dothichiza are attached; the anticipated Dothichiza infection, however, has not been noted.

On the other hand, clones have reacted differently to drought; stems died of cv. "regenerata" Harff - planted late, it is true - and an intense growth of Cytospora chrysosperma followed; on cv. "Bachelieri" the damage was considerable; on the 2 remaining clones it was negligible.

The experiments have shown that it was preferable to inoculate artificially - which was done in 1953 - rather than rely on nature for experimental infection by mere contact.

We noted some Dothichiza infestation of the new plantations in the Sinzheim communal forest and the recent Moos plantations, where hail had caused some damage.

(ii) "Braunfleckenkrankheit" and "bacterial infection"

Servazzi and Vivani have recently studied a disease in North Italy which attacks some clones, and in particular the x P. euramericana cv. "robusta" and which they call "bacterial infection"; the bark turns brown locally, cracks and a mucilaginous exudate occurs.

The Italian delegates, and especially Prof. Giordano, think that the spots and oozing observed in the stands on the dump land of the lignite district are due to the same disease.

One of us (Prof. Zycha) has noticed similar symptoms on beech, oak, birch and other broadleaved species, and considers that this disease is accidental and only develops under special climatic conditions; as the lesions heal fairly quickly, he does not think that it is a "chronic" disease.

The trees affected in 1950 now appear to have recovered, but fresh attacks were noticed at the end of the growing season in 1952 and prior to the spring of 1953. We saw scarred and newly-cracked spots on trunks felled in the thinning of the "Schallmauerbestand".

Whatever its nature, the economic significance of this damage is no less important; there are black marks inside the wood that lower its industrial value, so it would be desirable to prevent infection.

This may possibly be an attack of parasitic origin, more or less directly connected with some insect vector, but so far the question has not been broached.

The susceptibility of x P. euramericana cv. "robusta" to this disease shows the need for great caution in expanding plantations of this type.

It would be interesting to know the range of this disease and the clones susceptible to it. It is to be noted that it has also been discovered in France in the Savoy (Chautagne) and that it probably occurs in Belgium.

At all events, this question is worthy of the International Commission's attention and it seems desirable that pathologists and entomologists cooperate in an endeavor to solve it.

(iii) *Blackheart*

We have also often noticed the occurrence of blackheart in logs of x *P. eu-ramericana* cv. "robusta" felled in the thinning of the "Schallmauerbestand" (lignite district).

We recall in this respect the wish expressed in 1952 at the time of the meeting of the International Poplar Commission in Italy, that exhaustive research be undertaken with a view to ascertaining the nature and origin of this disease.

POPLAR IDENTIFICATION AND CULTIVATION

IN THE BADEN REGION

by

F. W. BAUER

Introductory remarks

1. The present paper is to be considered as an introduction to the excursions Nos. 4 and 5 conducted during the Study Tour, but it is also aimed at laying down a general silvicultural principle. It is for this reason that it cannot stand by itself and needs to be considered together with the actual inspections of the forests and the guide provided to all participants in the Study Tour.

Whereas my lecture in Baden-Baden was illustrated by a great number of slides I must be satisfied in this report with only a few diagrams, which I am afraid will very likely be a serious deficiency.

2. Excursions Nos. 4 and 5 and my lecture were only concerned with the problem of races and related questions. It then seemed that some of the participants had not properly understood the fundamental ideas I had been trying to develop, and I therefore wanted to ask for the floor once again at the end of the meeting with a view to making my point clearer. As this proved impossible due to lack of time I am taking this opportunity to do so here.

The notion of "species" is naturally inadequate to identify the ultimate genetic elements and to include them as such in any system. It is only the breaking down of genera into sub-genera, varieties and genetic races which enables the identification and systematic classification of the various forms of each species to be made. It is worth mentioning in this connection, that from a practical point of view it is the physiological characteristics which are more useful by far than morphological differences. It is known that an agreement was already reached in 1933, in the course of the International Botanical Congress held at Cambridge, on the necessity of making a distinction between "morphological" and "physiological" races (1).

The fight for existence, which is a dominating factor all through life, aims exclusively at the conservation and propagation of the species. This fight is particularly violent in the forest, where competition for the necessary light and soil ends finally in the so-called "site" or local race, through individual selection. All the physiological characteristics which appear in the struggle

(1) see: Code of Botanical Nomenclature - Cambridge Congress, 1933.

with environment are stabilized in a similar race and fixed in the hereditary patrimony. This process of natural selection, extending to millennia, has created the most heterogeneous climatic races. Thus Nature herself has selected the various species "according to the site's ecological conditions". The science as well as the practice of silviculture recognise incontestably a formation of local races as a result of local selection. The same holds good for the poplar, as this species also - like all the others - had to adapt itself to its environment.

In Baden the poplar grows just as well in the quasi-tropical climate of the bottomland along the Rhine, as in the regions of stagnant cold air of the Baar. It grows not only on the land flooded each year, but also on absolutely dry sites, and even in the steppe of the Brisach. In addition, the poplar grows not only on the heavy and almost compact clayey soils but also on light sandy soils and on peaty soils, sometimes with masses of undecomposed peat fairly close to the surface. It generally prefers neutral or slightly acid soils, but it is also found on very acid soils. It is already known that the poplar is distinguished by its great crossing capacity, and the possibilities of creating new individual forms are therefore practically unlimited. The greatest care must however be exercised in the choice of the parent trees to be used for vegetative reproduction. A selection made with strict consideration for the ecological requirements of the different sites as well as for the following conditions is a fundamental necessity

- Minimum age 25 years

The experience gained in our latitudes has shown us that periods of extreme drought, the lowest winter temperature and the highest water level only occur every 20 to 25 years. It is therefore hardly possible to say, before this space of time has elapsed, whether the different poplar races have really adapted themselves to the environment.

- Vigorous and slender habit, straight and cylindrical bole without defect
- Very satisfactory growth
- Resistance to phototropic irritations
- Valuable properties of the wood

The poplar races which were needed were chosen in Baden in accordance with these principles. The propagation of poplars taking into consideration the ecological conditions of the site was made in a purely empirical manner, but a scientific basis was afterwards given it by the research work conducted by MARQUARDT and BARNER (1).

(1) See the paper by Prof. Marquardt named "Methods for the selection of the ecological characteristics of poplar".

Research on origin will be continued in the experimental fields of the Institute of Silviculture, in co-operation with the Institute of Forest Botany. It will thus be possible to examine the ecological variations of the said universal races.

There is no justification for the thesis according to which a vigorous growth during the first 5 to 10 years is sufficient to prove the suitability of a non-indigenous race to a certain environment. In my opinion, complete suitability can only be ascertained at the time of utilization, when the proof has been given that the poplar had remained healthy up to that time, that it had shown a high growth until the end of the rotation, and - which must be considered as the essential - that its wood possessed highly valuable properties. It is, in fact, too often forgotten that it is not the vigour of growth of a tree but only the quality of the wood produced which allows an appraisal to be made of the economic value of a species. It is known that the properties of poplar wood depend in the first place on the site and secondly on the technique of establishment and treatment. A positive decision on the value of wood properties therefore always depends on the ecological conditions of the site. This holds good in the case of the poplar especially, whose wood is sometimes of different quality even in sites very close to each other.

When it is wished to establish an irreproachable selection of local races, the variations of the climate and of the soil must be distinguished as follows

1. Climatic races

The so-called climatic races derive from the length of the growing season, which sometimes differs greatly, and has a great bearing on the growth of poplar.

The experiments I have conducted personally have indicated the necessity of discerning three climatic patterns:

- a - low lying regions, warm, with a growing season of about 8 months
- u - cool regions at a higher elevation with a growing season of about 6 months
- i - average between a and u, with a growing season of about 7 months

The annexed climatogram of the higher regions as well as of the bottomlands of our country shows the necessity for a similar climatic delimitation. It shows for example that the general climatic conditions of the plain of the Rhine (a) might be better compared to the climate of Northern Italy, and those of the high plateau of the Baar in Baden (u) to the climate of Southern Finland.

2. Types of soil

Soil conditions are characterized by 5 factors recognized as being equivalent; these are:

water regime (ground water, holding capacity, capillary rise)

mechanical composition of the soil (content of nutrients and adsorption)

depth of the soil (depth of the soil layers likely to be penetrated by the roots)

reaction of the soil: pH of horizon A

reaction of the soil: as difference between the pH value of horizon A and that of the sub-soil.

The figures 0 to 5 signify these different degrees. The figure 5 always represents the best. Conditions above the best are represented by minus figures, such as -3 and -4.

The following examples illustrate the ecological conditions whilst characterizing the following types of soil:

5 5 4 5 4 moist; well aerated - colloidal soil rich in nutrients - deep ; horizon A neutral; slightly acid sub-soil.

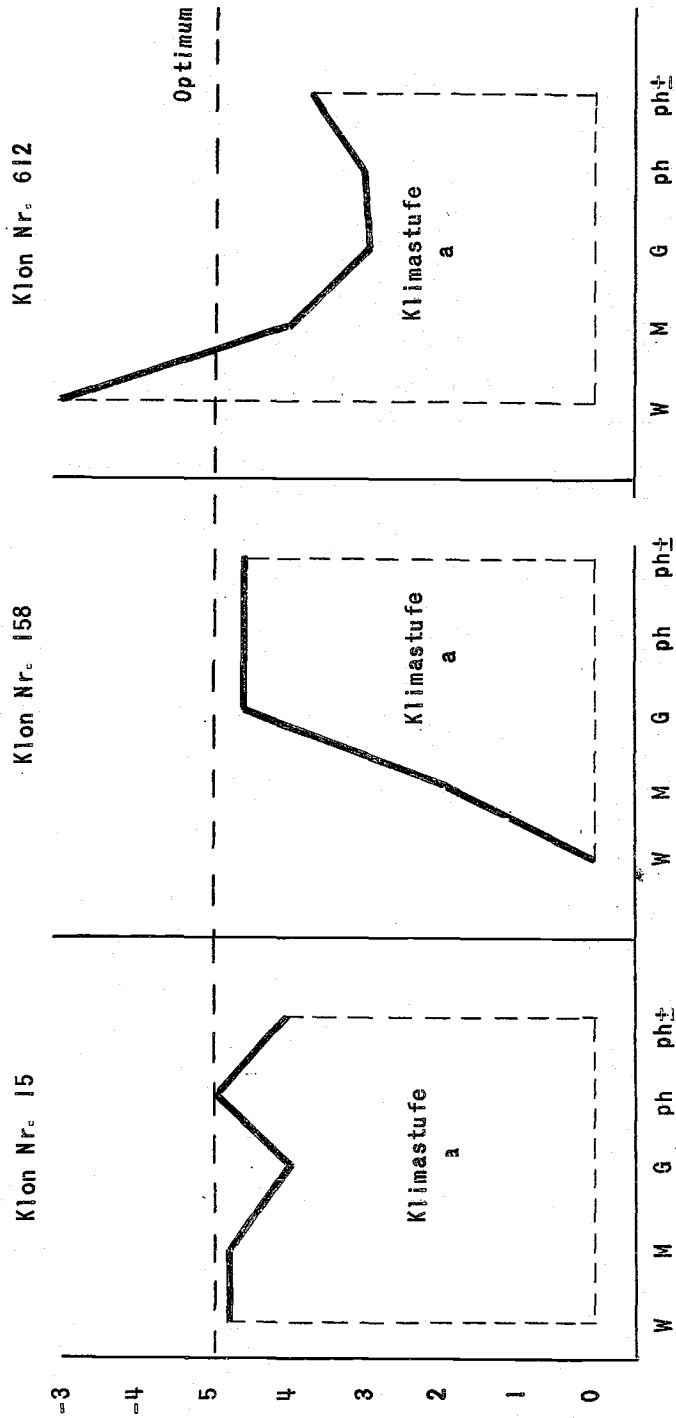
0 2 5 5 5 extremely dry, even arid; sandy soil weakly colloidal; deep ; neutral reaction from horizon A to the sub-soil.

-3 4 3 3 4 extremely damp site, soaked soil; aeration mostly interrupted, clayey soil; medium depth; horizon A acid; sub-soil only slightly acid.

If these data are represented in a table the following "site diagrams" are obtained (see next page):

SITE DIAGRAMS OF POPLAR CLONES IN THE BADEN REGION

Standortsdiagramm badischer Pappelklone



Klimastufe = type of climate

W = water regime

M = mechanical composition of the soil

G = depth

ph = soil reaction

ph± = soil reaction

C L I M A T O G R A M S

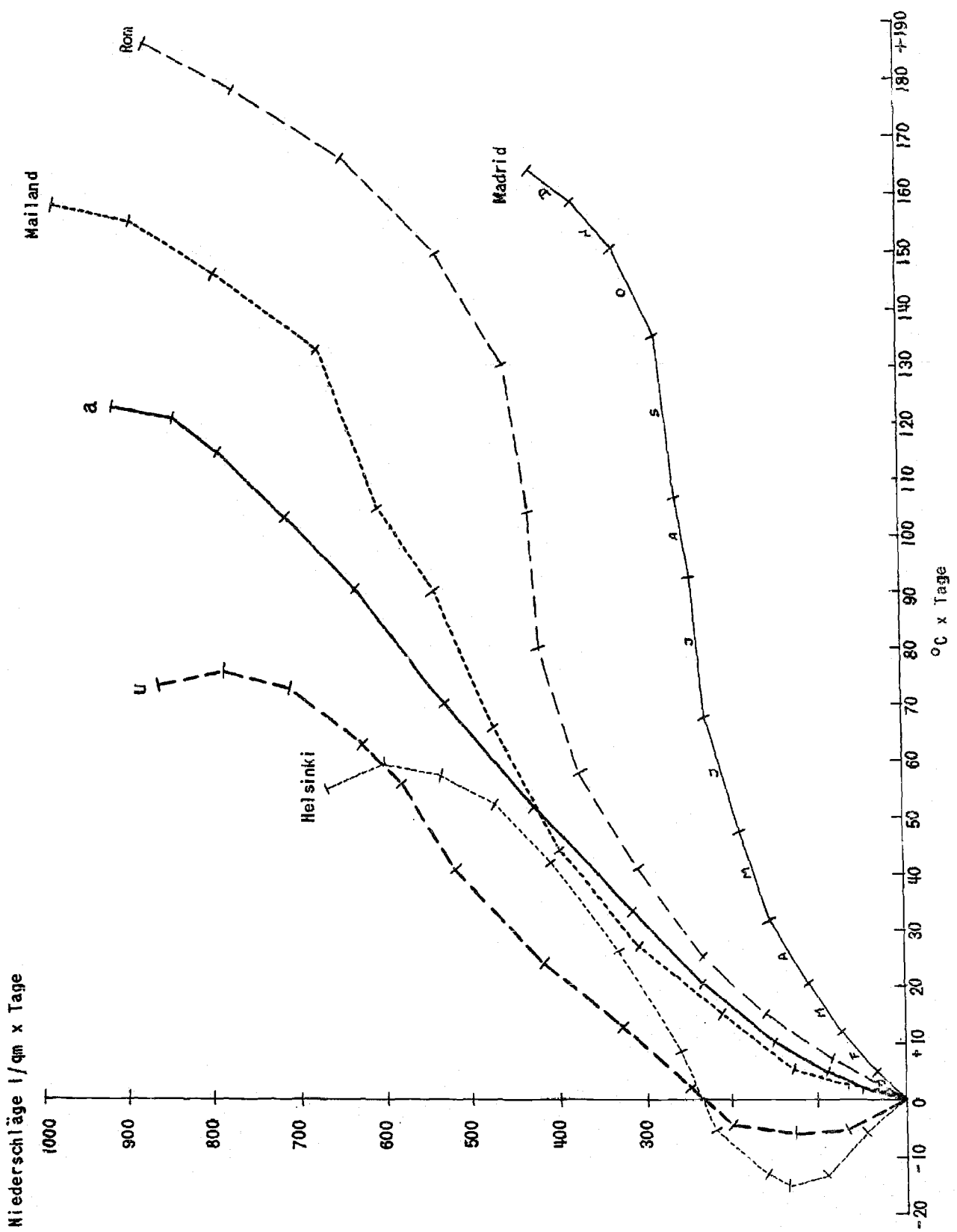
for the climatic races of the regions "a" and "u"
compared with the climatograms of
MADRID, ROME, MILAN, and HELSINKI.

Niederschlage l/qm x Tage = Rainfall in litres per square meter multiplied
by the number of days

°C x Tage = Temperature in °C multiplied by the number of
days.

KLIMAGRAMM

für Klimarasse a u. u im Vergleich mit Madrid, Rom, Mailand u. Helsinki



EXTENSIVE AND INTENSIVE POPLAR CULTIVATION

by

G. PICCAROLO

When the density of poplar plantations is spoken of, it generally refers to that type of poplar cultivation which one believes best suited to the ecological and economic conditions of a particular area. As such conditions may vary greatly and give rise to completely different types of poplar growing, comparisons are often made between densities in poplar plantations located on very dissimilar sites. Obviously no practical conclusions can be drawn from such comparisons, as they apply to entirely different situations.

There are two very distinct possible trends in poplar cultivation: the one of a forest nature; and the other of an intensive or industrial or, better still, agricultural character.

Both have their "raison d'être" and their proper place.

The use of poplar as a forest species is predominately practiced in North and South America, Germany, Switzerland, and to a very limited extent in France and Italy. Such extensive use of poplar in forests usually takes the form of dense stands frequently established from cuttings or sets. They seldom derive from a single clone, being composed usually of a number of clones; or as is still more frequent, they consist of poplar associated with other tree species such as willow, alder, ash, oak, black locust etc., according to the soil and its moisture content. The mixed stand containing poplar seems to us to be the best, for this constitutes a plant association in which the poplar enjoys the advantages offered by the other forest species, serving at the same time a useful purpose. An excellent example of this is to be found at Yverdon, Switzerland, on the lake of Neuchâtel, where magnificent specimens of 60 - 70 year old *P. euramericana* f. *serotina* associate with other wood species on a fairly moist soil on the shores of the lake. Of all the species there, the poplar is the most rapid growing, while its associates afford it shelter and promote natural pruning. This is clearly a case of extensive cultivation.

In France, along the canals that divide the natural meadows of the Poitou Marsh, a considerable number of poplars are grown in association with other moist-soil species. These trees, too, attain the age of 50 - 60 years before being exploited, as the plywood factories that use them require logs of not less than 40 - 45 cm. in diameter. We find there an excellent type of poplar which the International Poplar Commission has decided to name *P. euramericana* f. *regenerata* "Blanc du Poitou" or white Poitou poplar. This again is a case of extensive

cultivation which is, however, in its own way, quite sound considering the environment and purpose. It is also common in Austria and Germany.

Extensive poplar cultivation has not proved so satisfactory, however when based exclusively on the poplar, whether on one or on several clones, densely planted with the object of subsequent thinnings. A poplar plantation so constituted seems to us to have all the disadvantages of pure even-aged high forest and none of the advantages of the mixed forest.

An attempt is usually made to justify this type of poplar cultivation by arguing that with high wages for labor, planting costs must be kept low. Plantations spaced 2 x 2 m., 3 x 3 m. and at the most 4 x 4 m. are in fact often established with 70 - 80 cm. long cuttings, pushed roughly half way into the ground, with no digging of holes and generally no soil preparation. In Argentina, for example, such plantations are subsequently clear cut. By the age of 5 or 6 years trees attain an average diameter of 18 - 25 cm. at breast height. The wood is sold by the linear meter and logs up to 3 or 4 cm. in diameter are graded for packaging and pulping use. The high prices obtained for the raw material and the non-insistence of the market on quality make even this type of poplar cultivation profitable.

It obviously cannot be compared with intensive poplar cultivation, supplying saw and veneer logs, whose stumpage would certainly be high as compared with finished products prices.

Actually, market prices for such finished products are very high, since they are all now imported from Europe, the United States and Canada. We also know, however, that several South-American industrialists have been looking into the question of producing such raw material locally through intensive poplar cultivation.

In view of the large areas available, the high cost of labor, the possibility of wide use of machinery, and the high prices brought by the various categories of poplar wood, the question might well be asked in many countries whether the use of poplar as a forest species or intensive poplar cultivation as practiced in Italy is the more advantageous. No doubt the best answer is provided by actual experience, but intensive cultivation, unfortunately, has not been tried everywhere. One of the elements of comparison is thus lacking for a decision with full knowledge of the facts.

A form of close planting has been proposed, utilizing a variety of clones to lessen the risk of failures such as occur in pure stands, and to reap the benefits of associations. We do not think this a particularly promising suggestion, for the aptitudinal and biological differences between the clones, par-

ticularly those ordinarily grown, cannot be compared with those of the various species to be found in a mixed forest.

Some people also justify the use of poplar as a forest species on the grounds of labor costs, others on the grounds of the yield from thinnings. In view of the great amount of forest land available, it may still be an economic proposition to leave areas under timber longer by extending rotations. Experimental results prove that the thinning process is technically feasible, i.e. that the young trees recover, though slowly, after a period of overcrowding.

In Italy, where there is a big demand for high-grade timber for industrial use, but little land on which the poplar can thrive, that is, on which good and sufficiently rapid growth is possible, an intensive or industrial or agricultural poplar cultivation is imperative. Certain preparatory cultural operations in nurseries are, therefore, necessary to speed up increment and produce the quality of wood most in demand by user industries.

As regards spacing, we have often been asked whether we selected poplars suitable for plywood, for lumber and packaging, for match-making, paper-making and the like; or again, whether we planted with some specific purpose in mind, i.e. whether our object was production of wood for plywood only, or for lumber, packaging, matches, or paper alone. Here, too, our reply has been that such pre-established objectives are unrealistic. The mature tree yields raw material for the different industries in varying proportions according to its diameter, form, wood structure, the existence or absence of defects. The particular end-use of the product also depends on fluctuations in demand and on the degree of tolerance in the matter of quality, the principle of maximum over-all profit being kept always in mind.

In open-field plantations, therefore, spacing generally aims at producing not one particular category of wood but rather the maximum volume of first-quality wood for the most exacting industries, and then satisfying the less difficult industries with what remains, according to the present day order of priority: plywood, match-making, sawnwood, packaging, and paper-making industries. In view of their much smaller needs, it is hardly worth mentioning here the boot and shoe, wood wool, wood flour, toy, and frame-making factories.

Rotations, spacings, thinnings, cultivation of crops between the rows, extensive poplar cultivation, intensive poplar cultivation, are questions that cannot be dealt with separately and permit of no conclusions, unless the conditions

and the purposes in view have been clearly defined.

Within a body such as the International Poplar Commission, the extremes of the problems involved can be encountered.

We have already had an opportunity to appreciate the effects of spacings and thinnings on our study tours in France and Belgium, and the local experts kindly provided us with information, examples and data, of which we will mention those supplied by the "Union Allumettière" (Match Manufacturers' Union).

However, the further discussions which are still being held on the subject, in which there is disagreement due solely perhaps to the different angles from which the problem is approached, have led us to undertake further research. Our comments here, however, will be confined to Italy and particularly the Po valley where the terms of the problem are quite clear and well defined. In other words: in those areas where land suitable for poplar growing is limited, the climate is favourable, and there are industries whose demand for wood is becoming increasingly strong and pressing as compared with supply, the goal is to produce the greatest amount of best quality wood per unit of area, as rapidly as possible and at minimum cost.

This does not exclude different attempts at poplar cultivation elsewhere, where the amount of land available, the shortage and cost of labor permit other solutions with a less intensive - not to say more extensive - poplar cultivation.

So that there may be no misunderstanding, we shall begin by defining what we mean hereinafter by poplar cultivation, for it is frequently impossible to reconcile points of view simply because the topic of discussion is not clearly defined.

We propose to deal only with the so-called "specialized" poplar cultivation peculiar to the Po Valley, occurring on land which may be periodically flooded and using poplars of the *Algeiros* section. The cultivation of poplar mixed with other wood species thus remains out of the picture, as well as that on riverbanks. Those cases where the poplar is associated with other tree species and assumes all the characteristics of a forest species are, of course, even further out of it (like the excellent example we saw in Switzerland during the International Poplar Commission's study tour in 1950 on the Lake of Neuchâtel, in the cantonal forest of Grèves d'Yvonand at Yverdon).

We would make it clear once again that it is not our intention to start an argument either with Fischer (1950), Müller (1951), Georgopoulos (1952), Schreiner and Basbous (1950), or Bauer, who start off with quite different principles that are justified for their particular countries. On the other hand, we would

state immediately that we are closer to the views expressed by Mr. Hilf ("Kann man Pappelbestände durchforsten?" - Can poplar stands be thinned? - Holz-Zentralblatt, Stuttgart, Nr. 59, 15 May 1952), for many of his ideas are similar to ours.

We merely set forth here some of the first concrete data obtained from the exploitation of poplar plantations under similar conditions, dense, thinned and normal, grown together with farm crops during the early years of the rotation.

We would also point out that the only type of thinning taken into consideration here is what Hilf calls "rigid thinning of stands". In a plantation with initial spacing of 3 x 3 m. the plants in every second row were removed in both directions perpendicular to the side of the square, so that 831 trees per hectare were cut, leaving 280 with a spacing of 6 x 6 m. This final spacing is already regarded as one of those to be recommended for normal poplar stands of the area, although it is only the minimum suggested for final plantations.

The data were collected by Dr. Vaccarone of the Technology Section of the Poplar Cultivation Experiment Institute of Casale Monferrato, and can be supplied in detail to those interested. We here confine ourselves to what we regard as essential to a clear understanding of the operation and comparisons.

Planting at 3 x 3 m. was carried out in the spring of 1941 on a plot in the "Mezzi" estate of the Casale Monferrato Institute, using two years old poplars of the P. euroamericana (Dode) Guinier f. I 154 clone. The soil was alluvial, light, and subject to the periodically flooded. The plot was surrounded by poplar stands on three sides and left open to the south. In the first year the poplars were grown in combination with a weeded crop, in the second with wheat, and then with forage plants.

On the first plot "A" there were 412 live trees standing in the sixth year when the thinning was carried out - plus six others that had died (approximately 1.5%). Their average diameter was from 13 to 15 cm. The trees on the open southern side had the largest diameters: 3 of 22 cm., 4 of 23 cm., 3 of 25 cm., 2 of 26 cm., 1 of 28 cm. Inside, only 3 trees attained a diameter of 22 cm., 3 of 23, and 1 of 24.

Figures for trees on the fringe have been quoted for those who wish to be stricter and not take into account their superior growth, as has been done for plantations established at normal spacing.

The thinning in the 6th year removed 300 trees. The result, on a hectare basis, are shown in the attached table together with figures for the final cut in the 11th year, which was decided upon in the light of the general vegetative condition of the plantation.

On the neighbouring not thinned plot "B", there were 989 live trees in the 11th year plus 96 dead (roughly 10%). Their average diameter was from 16 to 18 cm. The poplars on the open, unshaded southern side had the following diam-

eters: 7 of 27 cm., 6 of 28, 1 of 30, 1 of 31, 1 of 32 and 2 of 34 cm. The maximum diameters inside were: 3 of 27 cm., 4 of 28, 3 of 29, and 1 of 30 cm.

The figures given on a hectare basis have been compared with those for a poplar plantation of the same age consisting of a so-called "Canadian" mixture, with a spacing of 35 square meters per plant (10 x 3.50 m.), which is practically the same as the final spacing after thinning of 36 square meters per plant. Likewise, the products obtained have been compared with those of a similar plantation of the same age but established with a selected clone (214).

For convenience, summarized data have been tabulated in the attached table already mentioned. Detailed per hectare figures and those obtained directly can be supplied on request.

To complete the study, we should also give the cost of planting, rearing and logging and the profit from the associated farm crops. But that would lead to the establishment of one of those "crop accounts" which modern rural economics has long ruled out. We would add that, in cooperation with the Institute of Agrarian Economy of Rome, we are now engaged in a systematic research program.

Although no definite conclusions are yet available, we feel we can confine ourselves to the cases cited - state that:

- (i) dense planting is decidedly inadvisable in our region in view of the prevailing conditions and of the methods at present in use;
- (ii) thinning makes for improvement, but the higher establishment cost and the smaller amount of second grade categories obtainable somewhat reduce the real difference as compared with initially better spaced plantations. Presumably, if less costly planting stock were used (sets or cuttings instead of two year old plants) and a less painstaking method adopted, the volume and cash yields would also substantially decline;
- (iii) with the same rearing technique, the use of selected clones instead of the old (Canadian or Caroline) mixtures is certainly advisable, quite apart from the question of protection from redoubtable hazards;
- (iv) the indices of comparison reveal the importance of producing large-diameter mature trees, so as to obtain the greatest percentage of high grade categories.

Other tests will be made with a variety of spacings, thinnings, and crop associations.

In any event, this particular case and previous observations in Po Valley plantations lead to the belief that obstructed growth is attributable to competition between the roots rather than the crowns. The root-system of the poplar

is very shallow and root-competition therefore begins much earlier than crown-competition.

But the effect of this and other phenomena must be determined experimentally rather than by induction, starting always from clear and precise premises.

DATA ON A HECTARE BASIS

for a dense, thinned and unthinned poplar plantation, a normal poplar plantation from the old-mixture, and a normal poplar plantation from a selected clone.

	3 x 3 m. plantation - clone 154 - not thinned - cut at 11 years			3 x 3 m. plantation - clone 154 - thinned at 6 years - final cut at 11 years			10 x 3.5 m. plantation - Canadian mixture - not thinned - cut at 11 years			10 x 3.5 m. plantation - clone 214 - not thinned - cut at 11 years		
	Volume		Value	Volume		Value	Volume		Value	Volume		Value
	m ³	%	Lit.	m ³	%	Lit.	%	m ³	%	Lit.	%	Lit.
Veneer logs	11.951	5.9	179,265	22.850	10.3	342,750	15.8	92.683	34	1,390,245	46.4	1,774,200
Saw logs	47.971	23.3	479,710	60.932	27.5	600,932	27.7	103.680	38	1,036,800	34.5	1,323,200
Pulpwood	145.246	70.8	1,089,345	d 74,000 f 68,548	62.2	d 708,346 f 514,310	56.5	76.425	28	573,188	19.1	731,700
Total	205.168	100.	1,748,320	226.330	100.	2,166,338	100.	272.788	100.	3,000,233	100.	3,829,100
I N D I C E S	1.		1.	1.10		1.23		1.33		1.71		2.19
Number of trees cut	1,110			d 834 f 276				285				285
Average volume per plant (m ³)	0.1847			d 0.088 f 0.5511				0.9574				1.2219
Average annual growth (m ³)	18.65			20.58				24.55				31.65
Average annual increment in value per hectare (Lit.)			158,938			196,939				272,748		348,100

Notes: d = thinning (the value of thinning products being computed at 5% interest up to the end of the rotation)

f = final cutting

Unit prices loaded on truck: veneer logs 15,000 Lit. per m³
saw logs 10,000 Lit. per m³
pulpwood 7,500 Lit. per m³

Casale Monferrato, 26 April 1953

OBSERVATIONS ON POPLAR CULTIVATION IN THE BADEN REGION

by

A. HERBIGNAT

The ideas developed by Prof. BAUER and Prof. MARQUARDT in the preceding reports are focussed on two main points:

- (i) the importance of poplar in forest economy and its silvicultural treatment;
- (ii) the selection of physiological or site races according to the ecological conditions of the site.

(i) the importance of poplar in forest economy and its silvicultural treatment

(a) No fault can be found with the principles of Prof. BAUER'S statement on the treatment of poplar in the forest, which is sound and corresponds with the present day conception of silviculture. According to the author, the object to be attained is the ultimate production of first choice veneer logs, with an intermediate stage of mass production of cordwood through thinnings (pulpwood)

We consider that the principal aim (veneer logs) can be attained without necessarily passing through the intermediate stage (pulpwood), at any rate in its meaning of mass production.

If, in effect, the provision of spacing poplars at 10 m. in each direction from the age of 35 at the latest is logical and justified, on the other hand the spacing of poplars at the time of planting (5 x 5) seems to us physiologically unsound: these poplars which have not only been selected, but chosen, will grow above the intermediate species in as uniform a manner as in a poplar plantation. At this spacing they will soon become obstructed in their growth and the development of their crown restricted, which must, however, be well released till final cutting. Early thinning only would diminish this initial drawback caused by insufficient space. We do not wish to say that it would annul it, as effects of thinning are still debated. But as the thinning must be carried out very early, it will affect only trees of little value or at any rate whose value depends on local outlets, which should be both permanent and remunerative. In other words, in those regions where no such outlets exist, the production of small dimension stock must, as a necessary evil, be reduced to a minimum and the spacing consequently increased. The intermediate species will moreover have more space in which to develop freely and thus bring about a close canopy. If local conditions can to a certain extent argue for a relatively reduced spacing, this last must nev-

ertheless remain compatible with physiological requirements if one wishes to obtain vigorous and healthy trees up to the age of exploitation. Neither must it be entirely forgotten that unforeseen circumstances may make it necessary to delay the first thinning.

(ii) the selection of physiological or site races according to the ecological conditions of the site.

With a view to assuring rational plantations in the Auewald of Baden, Prof. BAUER studied the ecological conditions of the different sites, which he determined taking the following factors into consideration: climate, water, and soil composition. In each of these sites he sought out types or parent-trees which seemed to him had best adapted themselves to the ecological conditions, and which at the same time yielded the maximum amount of wood of the desired quality. He thus identified empirically and thereafter propagated some clones which he thought answered best to the conditions of each site. To confirm the value of this empirical procedure Prof. MARQUARDT considered applying the method of plant physiology, which formed the subject of his lecture, to lay down the ecological requirements of the poplars identified by Prof. BAUER, and to determine whether these requirements were heritable. The experiments of his collaborator, Dr. BARNER, which have been concerned to date only with the water requirements of poplars, proved that it was possible to define some clones genetically for their resistance to prolonged drought, and have thus confirmed the fact that physiological habits can be heritable in the same way as morphological characteristics.

Prof. MARQUARDT'S method could therefore enable a study to be made, during one or two growing seasons, of the genetic constitution of the various poplar types in relation to their ecological requirements. But would this be the only course available to put at the disposal of poplar growers, - which is after all the ultimate aim of genetics and breeding - clones producing the maximum of wood of the required quality, on the sites whose ecological conditions are known to them? Prof. M. R. ROHMEDER thinks, with reason, that when the method of plant physiology has shown in certain individuals opposite heritable ecological requirements, it should be possible to create valuable selections by means of crossing. These selections, asexually propagated, could also be profitably investigated by the physiological method.

We have arrived in the matter of genetics and breeding to the point of studying no longer only the distinctive properties of the species, sub-species, race, sub-race, variety, etc., but above all the heritable ecological particularities of the individuals.

The field for research still remains very great as was pointed out by the

various specialists who took part in the debate. To coordinate the research necessary in the different countries, and to put the results of this research at everyone's disposal, it is necessary to understand one another and therefore the same language ought to be spoken: in other words, it is highly desirable that the research workers imitate Professor BAUER, who, as a result of Mr. POURTET'S proposal made during the Congress, is no longer classifying poplars cultivated in the Baden region according to his own silvicultural ideas, but has combined his classification with the rules of international nomenclature.

II - PROCEEDINGS OF THE FIFTH INTERNATIONAL
POPLAR CONGRESS

- A. General Proceedings
- B. Report of Field Excursions and the
Session of the Congress proper (4 to
6 May 1953), by F.W. Bauer.

A. GENERAL PROCEEDINGS

The Fifth International Poplar Congress was held in Germany, from 29 April to 8 May 1953, at the invitation of the Federal Minister of Food, Agriculture and Forests and of the Chairman of the German Poplar Commission. More than 200 experts attended, from the following countries: AUSTRIA, BELGIUM, CHILE, FINLAND, FRANCE, GERMANY, GREECE, IRAN, IRELAND, ITALY, LUXEMBOURG, NETHERLANDS, SPAIN, SWEDEN, SWITZERLAND, SYRIA, TURKEY, UNITED KINGDOM, and YUGOSLAVIA. Some countries expressed their regret at being unable to attend, as follows: Argentina, Canada, Denmark, India, Iraq, Pakistan and the United States. The FAO and the International Union of Forest Research Organizations were also represented.

The Congress was officially opened on 5 May at the "Kurhaus", Baden-Baden, by Prof. Niklas the Federal Minister of Food, Agriculture and Forests; also present were Dr. Warsch and Professor Bauer, representing the German National Poplar Commission, and many other high ranking German officials. Besides the working sessions at Baden-Baden, it included a study tour from Münster to Munich, passing through Westphalia, the Ruhr basin, the lignite district between Cologne and Aix-la-Chapelle, the valleys of the Rhine and the Neckar, the "Auewäldungen" of the Rhine, the valley of the Danube, and South Bavaria.

The Chairman of the Congress was Professor G. Houtzagers, Vice-President of the International Poplar Commission. The Director of the Forestry Division of FAO was represented by Mr. R.G. Fontaine.

The participants were received by the Minister of Food, Agriculture and Forests at Bad-Godesberg; the Chairman of the National Poplar Commission at the Government House at Cologne; the Government representative of the Land Baden-Württemberg at the Kurhaus of Baden-Baden; the Mayor of Münster in the old historic room of the Town Hall where the peace treaty of Westphalia was signed in 1648 after the 30 Years' War; the municipalities of Cologne, Karlsruhe and Baden-Baden; Mr. Ruskamp at Düllmen; the management of the Fortuna mine at Bergheim/Erfurt; the management of the Cellulose mill at Hattenheim near Wiesbaden; Count de Mirbach-Harff at Harff; Count d'Arco-Zinneberg at Moos; and finally by the Peasants' Union of Bavaria in the "Hofbräuhaus" of Munich.

Reports were submitted at the sessions of the Congress by Prof. Marquardt, on the methods for the selection of the ecological characteristics of poplar; by Landforstmeister Kanzler, on the possibilities of utilizing poplar wood, with particular reference to small dimension stock; by Prof. Brecht, on the manufacture of pulp from poplar wood; by Prof. Bauer, on the importance of poplar in forest economy and its silvicultural treatment, with lantern slides. These reports

gave rise to interventions, notably by Messrs. Piccarolo, Giordano and Pourtet.

In addition to these reports already in the program, Professor H.H. Hilf, lectured on windbreaks; Professor Giordano showed a film on the mechanisation of logging operations in Italy; and Mr. Helwa, Syrian Director of Forests, a film on poplar cultivation in the Gôûta of Damascus.

Finally, the participants were also able to attend the session of the International Poplar Commission which were held on 1 May at the Hotel Kölner Hof, Cologne, and on 4 May at the "Kurhaus", Baden-Baden.

A great number of documents had been prepared under Prof. Bauer's direction, and many pamphlets were distributed to the participants.

B. REPORT OF FIELD EXCURSIONS AND THE
SESSION OF THE CONGRESS PROPER
(4 to 6 May 1953)

by

F. W. BAUER

P r o g r a m

- Monday, 4 May : Excursion No. 4
Topic : Poplar races in relation
ecological requirements.
- Tuesday, 5 May : Working Session at the Kurhaus of
Baden-Baden
Lectures - Discussions.
- Wednesday, 6 May: Excursion No. 5
Topic : The importance of poplar
in forest economy and its
silvicultural treatment.

The theme chosen for the Fifth International Poplar Congress was as follows: "The Poplar, its importance in forest economy and its silvicultural treatment".

Prof. Bauer of Fribourg had been appointed to deal with the silvicultural aspects of the topic in question, and the field excursions No. 4 and 5 were prepared and directed by him. Prof. Marquardt of Fribourg lectured on "Methods for the selection of the ecological characteristics of poplar". Landforstmeister Kanzler, of the Forestry Section of the Ministry at Stuttgart reported on "Possibilities of utilizing poplar wood, with particular reference to small dimension stock", as this question has a direct bearing on the poplar's silvicultural treatment. Prof. Brecht of Darmstadt read a note on "Poplar wood for pulp".

Excursion No. 5 was meant to illustrate Prof. Bauer's ideas on the silvicultural treatment of poplar. It aimed, furthermore, at the demonstration of the role of poplar:

- (i) as the most important tree in the flood plain areas of streams and rivers;
- (ii) in the reclamation of alluvial soils, marshes (after drainage), and peaty areas;
- (iii) in the conversion of coppice with standards to high forest, that is:
 - (a) by planting after fellings of the coppice with standards have been carried out;
 - (b) by filling gaps caused in the coppice by conversion fellings;
- (iv) in the improvement of slow-growing broadleaved stands yielding little industrial timber, namely:
 - (a) first of all, to enrich hornbeam stands of little growth on sites of the H III type;
 - (b) to convert a coppice of alder on sites of the Er I and Er II type.

The places inspected offered the opportunity of studying the silvicultural treatment of poplar in all its stages, from the establishment of the stand till the final high forest. A detailed description of the various localities visited was given in the guide distributed to all participants, who showed particular interest in some stands of 25 years of age from which even 100 cubic metres of wood had been obtained through thinnings (average value: 80 DM per cubic metre).

The use of poplar in forest stands is more profitable by far than the use of any other broadleaved species, mainly on bottomlands and for the conversion of bad coppice with standards to high forest. The silvicultural system applied to the forests on the flood plain areas of the Baden region answers to the principles of a most intensive forest economy. It certainly ranks first, in terms of

return, amongst all broadleaved species. Poplar's increment, both in volume and value, is much higher than of any other species (e.g. 300% and 200% in comparison with oak and ash respectively, in the same ecological conditions).

Demonstration poplar stands of almost all age classes, established in accordance with the proposed economical and silvicultural aims, were also inspected. Participants were especially struck by a stand under conversion (see page 46 of the guide, excursion No. 5 II/e), with its annual growth of 15 cubic metres per hectare and annual profit of 930 DM per hectare (1951 prices) during the whole of the conversion period; 42 years. A 70 year old stand with maple in the lower and middle storeys (see page 48 of the guide, excursion No. 5 II/7) was also very much admired. After an accurate appraisal its growth was estimated to be as high as 23.4 cubic meters per hectare and per year, and its growing stock 845 cubic metres. Of these, approximately 600 are first quality veneer logs. Although no profit has yet been obtained from the young stands (see page 46 of the guide, excursion No. 5 I/3 to 12), they were inspected all the same with great interest. The reason is that the idea of introducing the growing of poplar in that district was at the root of the fight against malaria. Such a fight was imperative to enable that district to be reclaimed.

The participants in the congress were shown the conversion of coppice and coppice with broadleaved standards to a first-class poplar forest during their visit to the communal forest of Neuburgweier. The guide, which has already been mentioned several times, offers some detailed information on the conversion which is now being carried out with great success. In 50 years' time, the sustained yield will increase by 300%, the annual output of industrial timber by 900%, the growing stock by 160%, and the stumpage by 500%. The partial conversion of this forest, which covers an area of 41 ha., has already increased the annual production by approximately 100 cubic meters. What is most important, however, is the augmentation of log production by about 120 cubic meters, and of pulpwood by 30 cubic meters, while only small dimension stock was obtainable in the past. As of today, this represents a supplementary revenue of approximately 10,000 DM for the landlord.

The experimental plots laid down in the communal forest of Au (see page 48 of the guide, excursion No. 5 III/2) are a very good example of how yield can be increased on dry sites by the use of poplar. Only by setting 42 poplars per ha. among the existing forest growth, the volume of industrial timber and the value of the stand has been more than doubled.

Along with the technical silvicultural questions, the Fifth International Poplar Congress was concerned with the problem of choice of races, which was

exhaustively covered by Prof. MARQUARDT of Fribourg in his lecture. Messrs. PICCAROLO, POURTET GREHN and ROHMEDER took part in the debate which followed, expressing their own ideas with regard to this question, and so did Prof. HILF. Prof. BAUER conveyed to the Congress his ideas on this same question of choice of races and stressed the importance of distinguishing site races. As the silvicultural system of poplar in forest stands is fundamentally different from the cultivation of poplar outside the forest or in plantations, the basis of Prof. BAUER'S ideas is strictly biological.

The professional part of the Fifth Poplar Congress ended with an extremely interesting display of poplar plants grown in accordance with the aims to be attained. It is worth mentioning the way such a display was arranged, which enabled a comparison to be made of the varying development of the root system and growth of the different poplars. The growth of one year old poplars in the communal forest of Linzheim was so remarkable as to cause astonishment amongst the participants. Future growth will be at least 20 times greater than that of the pre-existing forest stand.

