

International Review  
of  
**FORESTRY  
RESEARCH**

*John A. Romberger and Peitsa Mikola*

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## Preface

This series of review volumes is being initiated to provide an international publication medium in which information and ideas of interest to forest scientists may be collected, evaluated, and synthesized. The approach is academic and fundamental with emphasis upon biological principles. The purpose is to promote progress of research in the many disciplines implicit in the terms "forestry" and "forest science." Articles will be written primarily for research workers, teachers, and advanced students, but administrators, economists, and forest and land managers will also find much material of interest.

Articles published in these volumes will be reviews and summaries of world literature concerning defined problem areas, but they will also be commentaries and syntheses. Some will be formulations and analyses of newly recognized problems. Each article is intended to serve as a primary reference and access guide to world literature until further progress justifies another article on the same subject. Because an author's opinions are of little value to readers unless the evidence upon which they are based is cited, every effort will be made to provide complete and accurate literature references.

In order to promote communication with the widest possible audience, the language of publication will be English. But because there will be many readers whose first language is not English, special efforts will be made to maintain a simple and clear style free of provincial or regional attitudes and expressions.

Subjects will be selected, not on the basis of what constitutes forestry research proper, but with regard to what is of interest and value to those studying, teaching, or doing research in forestry. The authors will frequently not themselves be foresters, but they will always be interested in the problems basic to forest science.

Authorship will be by invitation from the Editors. The latter will be aided and advised by members of the internationally constituted Editorial Advisory Board. However, interested persons from all nations are encouraged to communicate suggestions for review topics and authors to board members or to the Editors.

JOHN A. ROMBERGER  
PEITSA MIKOLA

*Beltsville, Maryland*  
*October, 1964*

# Contents

## LIST OF CONTRIBUTORS

v

## PREFACE

vii

## History of the International Science of Forestry with Special Consideration of Central Europe

*Kurt Mantel*

I. The Importance of Historical Retrospect in Forestry	1
II. General Survey of the Development of Forestry	3
III. Research in the History of Forestry	5
IV. The Development of Forestry Literature and Forestry Training and Research in Germany	9
V. The Development of Forestry Literature and Forestry Training and Research in France	22
References	28

## Improvement of Forest Growth on Poorly Drained Peat Soils

*Leo Heikurainen*

I. Introductory Background Information	40
II. General Discussion of Poorly Drained Peat Soils	44
III. Classification of Swamps for Forest Improvement Purposes	47
IV. Water Relations of Peat Soils	63
V. Drainage Technique	66
VI. Silvicultural Aspects of Drained Areas	79
VII. Fertilization of Peat Soils	89
VIII. Examples of Tree Growth on Drained Swamps	97
IX. Conclusions	99
References	101

## Determination of Nutrient Requirements of Forest Stands

*Carl Olof Tamm*

I. Introduction	115
II. Various Approaches in Forest Nutrition Research	118

III. Critical Discussion of Some of the More Important Results of Forest Nutrition Research	148
References	159

## Evaluation of Forest Site Productivity

*Charles W. Ralston*

I. Introduction	171
II. Measurement of Site Productivity	172
III. Site Productivity Factors	174
IV. Methods of Integration for Site Evaluation	192
V. Summary	194
References	196

## Anatomy, Chemistry, and Physiology of Bark

*Lalit M. Srivastava*

I. Introduction	203
II. Terminology	205
III. Vascular Cambium	206
IV. Anatomical Aspects of Bark	209
V. Chemistry of Bark	233
VI. General Physiology of Bark	251
VII. Conclusions	263
References	265

## Physiological Processes in Forest Tree Seeds during Maturation, Storage, and Germination

*Ken-ichi Hatano and Sumihiko Asakawa*

I. Introduction	279
II. Change of Moisture Content and Reserve Substances during Cone and Seed Maturation	280
III. Storage Conditions and Seed Longevity	282
IV. Dormancy and After-ripening	284
V. Environmental Factors and Germination Behavior	289
VI. Metabolic Processes during After-ripening and Germination	297
VII. Recent Advances in Germination Testing	306
VIII. Conclusions	308
References	309

**Harmonious Control of Forest Insects***A. D. Voûte*

I. Introduction	326
II. What We Observe in the Field	326
III. Regulation	334
IV. Influence of Forest Management and Other Human Activities	354
V. Harmonious and Integrated Control of Forest Pests	369
VI. Summary	372
References	375
 AUTHOR INDEX	 385
SUBJECT INDEX	400



# History of the International Science of Forestry with Special Consideration of Central Europe

Literature, Training, and Research from the Earliest  
Beginnings to the Nineteenth Century

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I. The Importance of Historical Retrospect in Forestry . . . .	1
II. General Survey of the Development of Forestry . . . .	3
III. Research in the History of Forestry . . . .	5
A. Work Areas in Forestry History Research . . . .	5
B. Research Tasks in the History of Forestry . . . .	7
IV. The Development of Forestry Literature and Forestry Training and Research in Germany . . . .	9
A. History of Forestry Literature . . . .	9
B. The Development of Training in Forestry . . . .	18
C. The Development of Research in Forestry . . . .	20
V. The Development of Forestry Literature and Forestry Training and Research in France . . . .	22
A. The Development of Forestry Literature and Research . . . .	22
B. Forestry Training at Nancy and the Development of Litera- ture under the Influences of the German Classics of Forestry .	27
References . . . .	28

## I. The Importance of Historical Retrospect in Forestry

Few other branches of science and economics build so extensively on historical foundations as does forestry. The reason for this is to be found in the extraordinarily long growth period of a forest crop, which stretches over several human generations. The experience, achievements, and errors in the forest exploitation of our ancestors in preceding centuries have an immediate effect on the present and have determined the character and

extent of present-day forests. At the same time, moreover, they often provide valuable hints for contemporary and future forest management. The treatments of forests in the past, their care and management in the present, and their use in the future together form an integral progression.

Historical continuity is not limited to just the cultivation and management of the forests. Forest ownership and forest law also have roots that extend many centuries into the past, particularly in the old silvicultural territories of Europe. Forms of ownership in many cases can be traced back to the royal and feudal manorial forests and to the commonly owned woodlands which originated in the beginning of the Middle Ages. These forms of ownership were often associated with particular types of forest treatment, which have influenced the nature and use of the forests down to the present day.

The historical dependence of forestry gives us cause and an obligation to pay particular attention to historical methods in the practice of forest science. The problems and tasks which thus arise for research in forest history are many-faceted and wide-ranging.

First the area under study in research in forest history must be limited with respect to time and subject matter. With respect to time, such research should begin with mankind's very first recognizable influence on the forest. The point in time at which, for our purposes, the consideration of the history of forestry should cease is more difficult to determine. In Europe the mid-nineteenth century can be chosen as a terminal point; on other continents it should probably be somewhat later.

With respect to subject areas, the history of forestry includes human influences on the woodlands and the economic and cultural association of man and the forest. Particularly pertinent are the histories of economics, culture, and law considered from the forestry point of view. Where it concerns the history of the technical aspects of forestry, our study is very closely related to the history of silvicultural research.

We must distinguish between the *history of forestry* in the real sense of the term, as it is concerned with forests of economic importance, and the *history of virgin forests*, in which there has been no human influence. The history of forests is a scientific description of the *natural* development of forests with their trees and shrubs through the millenia, based on geological, paleo-botanical, pollen-analytical, and other studies. These studies must embrace the entire earth, because in connection with climatic conditions there arise possibilities of comparison which can have corresponding significance for contemporary forestry.

Plant sociology, pollen analysis, annual ring chronology, and radio-

carbon analysis are recent developments which assist in scientific inquiries into historical problems concerning forests and wood. Thus the history of forestry also touches upon the history of virgin forests, although the latter is chiefly the concern of botany and silviculture.

## II. General Survey of the Development of Forestry

A unified international history of forestry does not exist, for the history of forestry in individual countries is very diverse. An especially discriminating characteristic is the point at which a managed forest economy was instituted in various countries.

The origin of forest management and of forestry as a science lies in Central Europe. Diverse causes have occasioned this: favorable natural climatic factors have endowed the Central European forest with the possibility of maintaining itself even in the face of human use, which is not the case in warm and arid areas; man was somewhat dependent on the use of forest products and forest pasturage for his food and maintenance; and wood was at the same time the most important building material and fuel. Man was therefore adapted to the forest in a positive manner, and, in so far as he did not need to clear forest land for actual settlement, he early experienced concern for conserving the forest permanently for the needs of the community.

Because of the increasing population in the sixteenth and especially in the eighteenth century a wood shortage was feared, and hence a disaster resulting from a lack of domestic fuel and adverse effects on trade. Measures for planned management of the forests, for increases in production, and for the precise control of rate and type of utilization, as well as measures for forest conservation became necessary.

This concern was responsible for the birth of European forestry as a science in the eighteenth century. At the same time it was the reason why the introduction of forestry took place in the Old World earlier than in heavily wooded North America, which was settled later. In the latter case especially it was the detrimental influence of industrial exploitation of the forests which occasioned the establishment of a permanent administration for management of publicly owned forests. On the other hand, the forests in the warm and arid regions of the Orient, in which forests are in a precarious situation in any event, frequently fell victim to human exploitation, especially as goat pastures, before an effective forest administration could take over. In many places, particularly in the Mediterranean area and other semiarid and subtropical regions, goats have almost completely devastated the forests. One can without injustice, therefore, regard

goats as the worst enemies not only of the forests, but of good land use in general.

*Regional beginnings of forestry* can be found in Central European countries as early as 600 years ago. Germany and France and other silviculturally old countries had at that time already introduced measures promoting well-ordered forest management.

After the setbacks caused by the numerous wars in the seventeenth century, the eighteenth century brought an important advance in forest management in the German-French cultural area. In a similar manner other European countries—Denmark, Belgium, the Netherlands, Austria, and Switzerland—also introduced planned forest management and administration toward the end of the eighteenth century. The Northern, Eastern, and Southern European countries followed their example in the nineteenth century, as soon as market conditions on the European wood market allowed an economically profitable opening of the forests.

During the course of the nineteenth century some non-European countries, particularly the United States, Japan, and India, also developed regulated methods of forest exploitation, at least in theory.

Even now, however, careful forest management is practiced in only a small fraction of the total forested area of the world. According to the 1958 survey of the Food and Agricultural Organization of the United Nations (FAO) only 34% (about 1500 million hectares) of the forested area is actually being utilized, and only about 10% of the total area (scarcely 500 million hectares) is to be regarded as effectively and carefully regulated.

These conditions are indicative of the various degrees to which managed forest utilization has been developed in individual countries and explain why a presentation of a history of forestry as a unified development throughout the world is impossible. In the same manner the chronology and scope of development of the science of forestry is also highly variable in different countries. A depiction of the history of forest science in the form of a general international survey is, therefore, possible only when divided according to countries or cultural areas. The scope of the presentation will differ for each area according to the extent of available source materials and the significance of the forestry history in that country or area.

Cognizance of the source material of the history of forestry is at this time extremely variable. In many countries no satisfactory investigations concerning the history of forestry have yet been made. It is desirable that the necessary historical studies be undertaken in all countries.

### III. Research in the History of Forestry

#### *A. Work Areas in Forestry History Research*

##### 1. HISTORY OF THE EXTENT OF FORESTS

Forests cover a large portion of the land surface in many countries. Man's effects on the extent of these forests—whether through clearing the land, as has usually been the case, or through afforestation—must be documented and commented on as significant facts in the history of forestry.

Also pertinent in this respect are changes in tree species and methods of forest utilization as they were intentionally or otherwise induced by man's exploitation and management of what were originally natural, primeval forests.

##### 2. HISTORY OF FOREST UTILIZATION

The history of forest utilization in most countries is closely tied with the development of human civilization and culture. Products of the forest have played a significant role in the history of numerous nations, whether as wood for building material, raw material, or fuel, or in the form of secondary forest products such as fruits and pasturage. This is true not only in Europe, but particularly of the civilizations of the Orient.

##### 3. HISTORY OF FOREST MANAGEMENT

In Central, Western, and Southern Europe the history of forest management generally extends as far back as the late Middle Ages, or at least several centuries back.

Originally forest management control measures were primarily intended to regulate the previously arbitrary exploitation of forests and were enacted in conjunction with the first proposals for reforestation. The development of forest science began in the eighteenth century, particularly in France and Germany, and provided the basis for development of silviculture and for methods of forest appraisal (allowing meaningful regulation of yield). Historical examination reveals how many different methods of silviculture (for example, management of stands, or with emphasis on single trees) and forest appraisal (on the basis of area or of volume) were evolved, and how acceptance of these methods often changed, some, after once falling into disrepute, again coming into favor.

Particularly valuable, as a basis for contemporary and future utilization and management, is determination of the historical development of

management procedures and the yield determinations of different stands and entire forest districts.

#### 4. HISTORY OF FOREST LAW, FOREST POLICY, AND FOREST POLICING

This part of the history of forestry lies in an entirely different sphere, the political and legal. In general, throughout history the forest and its utilization has been an important object of regulation by law. There have been both authoritarian and liberal woodland regulations during the various governmental periods of nations. The consequences of these various legal systems are clearly evident in the history of forestry down to the present day.

#### 5. HISTORY OF FOREST OWNERSHIP AND RIGHTS OF UTILIZATION

The forest is an element which (in agrarian and property ownership states) frequently displays predominantly conservative traits. The history of its ownership and use therefore contributes important information concerning the development of human rights. On the other hand, the great forest domains were often considered to be relics of the dynastic and feudal systems and were involved in upheavals during periods of revolution. For the history of forestry there followed important consequences related to forest landownership and rights of use.

#### 6. COMPREHENSIVE HISTORY OF CHANGES IN THE FOREST INDUCED BY HUMAN INFLUENCES

Regional historical studies of the larger forest areas show in a particularly instructive manner how these have evolved under the influences of legal codes, land tenure, economic demands, and utilization techniques. Such regional forest history monographs are also instructive foundations for contemporary and future management of the woodlands.

#### 7. BIBLIOGRAPHY OF LITERATURE CONCERNING FOREST HISTORY

Two separate problems are involved here. First, a compilation of all writings on forestry which are themselves of historical interest should be undertaken. This so-called "retrospective bibliography" should include the old forestry works on all special subjects from the literature of antiquity to the mid-nineteenth century. A classified source catalog should be compiled from this information.

A second task is a compilation and cataloging of works which are concerned with general or particular segments of the history of forestry, and which are the present historical and bibliographic tools. Particular

efforts should be made to include in this "running bibliography" pertinent writings from related disciplines, such as legal, cultural, and economic history, and geography. It would have to be continually brought up to date.

#### 8. HISTORICAL BIOGRAPHY IN FORESTRY

There can be no doubt that single important personalities have exercised great influence on developments in the economics and science of forestry. For this reason the writing of biographies becomes essential to the history of forestry in general and to the special topics within the subject.

#### 9. HISTORY OF EDUCATION AND RESEARCH IN FORESTRY

The line of development from the old-fashioned type of empirical apprentice instruction at the hands of a master to modern education in forestry at universities reflects the line of evolution of forest management and scientific research in forestry. For this reason historians are obliged to examine these developments, establish their principle features, and determine their consequences.

The work areas defined above (except for the last), as well as the following tasks for the History of Forestry Section, were recognized and approved by the International Council of the International Union of Forest Research Organizations (IUFRO) in Vienna in 1961, on the basis of my proposals.

### *B. Research Tasks in the History of Forestry*

#### 1. IDENTIFICATION OF HISTORICAL MATERIALS, THEIR COLLECTION AND DOCUMENTATION

Materials to be collected include literature, records, biographical materials, and miscellaneous documents concerning the history of forestry.

The collection of literature and records would take place in national archives and libraries specializing in the history of forestry. The documentation could be undertaken in national documentation centers. Then the material could be forwarded to an international center for the history of forestry. The establishment of such a center should be encouraged.

The essential points concerning compilation of literature and biographical information (including portraits) have been mentioned above.

A particularly difficult job is the *compilation of records*. These include

deeds, charters, old forestry maps, property registers, forest descriptions, etc., which are in most cases extant only in the original handwritten form. Printed source collections may sometimes be available, as in the case of forestry regulations (e.g., in Germany dating to the year 1672), royal ordinances (e.g., for France dated 1610), or judicial precedents (e.g., the Austrian collection and that by Grimm).

The collection and processing of archival material in the history of forestry should proceed in two steps. The first step is the compilation of records by the creation of catalogs (indexes of forestry history), along with arrangements for the preservation of the original manuscripts. The second step is making forest history materials available for use through printing and publishing of pertinent lists and descriptions (e.g., "Regestenwerke"). The compilation and collection of these archival materials should, of course, be undertaken within the framework of universally accepted guidelines.

## 2. ESTABLISHMENT AND COORDINATION OF METHODOLOGY AND TERMINOLOGY IN THE HISTORY OF FORESTRY

This includes establishment of methodology and a well-defined nomenclature and terminology, and promulgation of general guiding principles for forestry history studies and research. Of course, these general principles should not hinder individual scientists in their investigations. Rather they should attempt to promote and coordinate these investigations toward a common goal.

## 3. EVALUATION OF RESULTS OF HISTORICAL STUDIES WITH REFERENCE TO ACTUAL FORESTRY PRACTICE

Evaluation of results of historical studies is of special importance to practical forestry. Works dealing with the history of districts and stands are particularly useful. Forest management, and especially silviculture, require consideration of the extensive fund of experience accumulated by many generations. Determination of forest management policies together with estimation of yields also makes use of information about historical evolution of relevant practices and concepts as a basis for long-range planning of a sustained yield forest economy. Knowledge of the historical development of forest ownership and regulation should form the basis for future political measures.

## 4. ESTABLISHMENT OF A HISTORY OF FORESTRY SECTION IN IUFRO

This has already been brought about. In view of the importance of research in the history of forests and forestry, eleven interested persons



introduced a motion before the council of the International Union of Forest Research Organizations (IUFRO) in Vienna in 1961 proposing the founding of a section for the history of forestry. The motion was approved by the International Council of the IUFRO with Professor Kurt Mantel being named as the first chairman of the new Section 02: History of Forestry.

The tasks of immediate importance to this new section are standardization of classification and terminology in the history of forestry, documentation, and creation of norms for the regional histories of forest districts and stands.

#### IV. The Development of Forestry Literature and Forestry Training and Research in Germany

##### *A. History of Forestry Literature*

##### 1. PRACTICAL EXPERIENCE AND ANCIENT LITERATURE AS A BASIS

Forest science was founded in Germany in approximately the middle of the eighteenth century. The basic principles of this science were founded on experiences gradually accumulated in the practice of forestry in Central Europe and passed on orally in the form of century-old traditions. Technical knowledge in various fields of forestry existed as early as the Middle Ages—for example, in the care of coppice forest, in the sowing of conifers (first carried out in the imperial forest at Nuremberg in the fourteenth century) in the regulation of the yield of forests (first realized in the city forest of Erfurt in the fourteenth century), in various types of forest management, and in other procedures of forestry.

These accumulated experiences in the management of forests were also handed down many centuries in writing, whether it was by medieval local forest ordinances, by the forest ordinances of the sovereigns of the sixteenth century and later, or by forestry literature.

Knowledge of forestry in the Middle Ages was probably enlarged by ancient Greek and Roman influences, because during the Renaissance and the Humanistic Era high values were placed on ancient literature. Italian influences have also been significant, both through direct transfer of practice from the Roman days, and because of the study of ancient literature by scholastics of the Middle Ages.

The German cloisters in particular did not forget the practical application of forest sowing and planting. It is not without reason that what are now the oldest known directions for this important part of forestry have