

Palaeobotany And Plant Evolution

As recognized, adventure as with ease as experience practically lesson, amusement, as skillfully as concord can be gotten by just checking out a books **Palaeobotany And Plant Evolution** plus it is not directly done, you could undertake even more not far off from this life, in this area the world.

We have the funds for you this proper as skillfully as easy pretension to acquire those all. We provide Palaeobotany And Plant Evolution and numerous ebook collections from fictions to scientific research in any way. among them is this Palaeobotany And Plant Evolution that can be your partner.

The Evolution of Plants - Kathy Willis 2014

Blends evidence from the fossil record and data from biomolecular studies to tell the story of plant evolution from the earliest forms of life to the present day. Its straightforward explanations and clear illustrations provide the most accessible introduction to plant evolution available.

Introduction to Plant Fossils - Christopher J. Cleal 2019-06-27

Offers a practical guide for the non-specialist on studying and learning from plant fossils to understand the evolution of vegetation on Earth.

Plant Evolution - Karl J. Niklas 2016-08-12

Although plants comprise more than 90% of all visible life, and land plants and algae collectively make up the most morphologically, physiologically, and ecologically diverse group of organisms on earth, books on evolution instead tend to focus on animals. This organismal bias has led to an incomplete and often erroneous understanding of evolutionary theory.

Because plants grow and reproduce differently than animals, they have evolved differently, and generally accepted evolutionary views—as, for example, the standard models of speciation—often fail to hold when applied to them. Tapping such wide-ranging topics as genetics, gene regulatory networks, phenotype mapping, and multicellularity, as well as paleobotany, Karl J. Niklas's *Plant Evolution* offers fresh insight into these differences. Following up on his landmark book *The Evolutionary Biology of Plants*—in which he drew on cutting-edge computer simulations that used plants as models to illuminate key evolutionary theories—Niklas incorporates data from more than a decade of new research in the flourishing field of molecular biology, conveying not only why the study of evolution is so important, but also why the study of plants is essential to our understanding of evolutionary processes. Niklas shows us that investigating the intricacies of plant development, the diversification of early vascular land plants, and larger patterns in plant evolution is not just a botanical pursuit: it is vital to our comprehension of the history of all life on this green planet.

Plants Invade the Land - Patricia G. Gensel 2001

What do we now know about the origins of plants on land, from an evolutionary and an environmental perspective? The essays in this collection present a synthesis of our present state of knowledge, integrating current information in paleobotany with physical, chemical, and geological data.

Paleobotany and the Evolution of Plants - Wilson N. Stewart 1993-02-26

This 1993 textbook describes and explains the origin and evolution of plants as revealed by the fossil record.

Paleobotany, Paleocology, and Evolution - Karl J. Niklas 1981

Principles of Paleobotany - Lily Bora 2010

A Natural History of the New World - Alan Graham 2011

A Natural History of the New World traces the evolution of plant ecosystems, beginning in the Late Cretaceous period and ending in the present, charting their responses to changes in geology and climate.

Palaeozoic Palaeobotany of Great Britain - C.J. Cleal 1995

This volume of the GCR series, one of two dealing with palaeobotany, covers the first 200 million years of the history of land plant evolution, as represented by the palaeobotany GCR site network of Great Britain. It demonstrates how the main facets of land plant evolution can be demonstrated at sites in Britain, and how the fossil record can be of value as an evolutionary and environmental indicator of the geological past.

The Evolution of Plants - Dukinfield Henry Scott 1912

An Introduction to Plant Fossils - Christopher J. Cleal 2009-09-17

This book provides an excellent practical introduction to the study of plant fossils, and is written for those who have had little previous experience of this type of palaeontology. The text summarizes the groups of plants occurring as fossils and describes how best to investigate them. It explains modern research techniques that reveal details of anatomical and reproductive characteristics, and the features for identifying

commonly found plant fossils. The approaches for interpreting these fossils are assessed, and the book highlights how such methods are employed by palaeobotanists to increase our knowledge of plant evolution, palaeoecology, palaeogeography and stratigraphy. The book discusses how the science of palaeobotany has developed over the last 300 years, with examples and illustrations from a global range of plant groups. It is valuable for students on introductory or intermediate courses in palaeobotany, palaeontology and plant evolution, and for amateurs looking for help in studying plant fossils.

Paleobotany and the Evolution of Plants - Wilson Nichols Stewart 1985

Principles of Paleobotany - William Culp Darrah 1960

Paleobotany - Edith L. Taylor 2009-01-21

This book provides up-to-date coverage of fossil plants from Precambrian life to flowering plants, including fungi and algae. It begins with a discussion of geologic time, how organisms are preserved in the rock record, and how organisms are studied and interpreted and takes the student through all the relevant uses and interpretations of fossil plants. With new chapters on additional flowering plant families, paleoecology and the structure of ancient plant communities, fossil plants as proxy records for paleoclimate, new methodologies used in phylogenetic reconstruction and the addition of new fossil plant discoveries since 1993, this book provides the most comprehensive account of the geologic history and evolution of microbes, algae, fungi, and plants through time. * Major revision of a 1993 classic reference * Lavishly illustrated with 1,800 images and user friendly for use by paleobotanists, biologists, geologists and other related scientists * Includes an expanded glossary with an extensive up-to-date bibliography and a comprehensive index * Provides extensive coverage of fungi and other microbes, and major groups of land plants both living and extinct

Woody Plants - Evolution and Distribution Since the Tertiary - Friedrich Ehrendorfer 1989-04-10

Paleobotany has enormously expanded the documentation of fossil plant groups, floras and vegetation types, supporting its conclusions by technically much improved analyses of microfossils (pollen) and anatomical details. An increasing quantity and quality of all these informations from the geosciences is available when we follow the history of the biosphere up to the present. Simultaneously, research from the biosciences on the morphology, ecology, distribution, systematics and evolution of extant vascular plants, and on the ecogeographical differentiation of the vegetation cover of our planet, has made enormous progress. Thus, a synthetic geo- and bioscientific approach becomes more and more feasible and urgent for further advances in the many problems of common concern. A symposium organized by the "Deutsche Akademie der Naturforscher LEOPOLDINA", attractive to paleo- and neobotanists, stimulated the discussion between specialists of the two disciplines. The main results of the symposium are now presented in this volume: Sixteen international contributions outline the current knowledge about the historical differentiation and evolution of woody plant groups and forests, covering the whole biosphere. This survey, from the beginning of the Tertiary up to the present, is a first synthesis of relevant data from the geo- and biosciences.

History of Palaeobotany - A. J. Bowden 2005

Often regarded as the 'Cinderella' of palaeontological studies, palaeobotany has a history that contains some fascinating insights into scientific endeavour, especially by palaeontologists who were perusing a personal interest rather than a career. The problems of maintaining research facilities in universities, especially in the modern era, are described and reveal a noticeable absence of a national UK strategy to preserve centres of excellence in an avowedly specialist area. Accounts of some of the pioneers demonstrate the importance of collaboration between taxonomists and illustrators. The importance of palaeobotany in

the rise of geoconservation is outlined, as well as the significant and influential role of women in the discipline. Although this volume has a predominantly UK focus, two very interesting studies outline the history of palaeobotanical work in Argentina and China.

Fundamentals of Palaeobotany - Sergei Meyen 1988-04-30

There have been at least ten English-language textbooks of palaeobotany since D. H. Scott published the first edition of *Studies in Fossil Botany* in 1900. Most have been written by scientists who were primarily botanists by training, and were aimed largely at a readership familiar with living plants. They tended to follow a general pattern of an introductory chapter on preservation of plants as fossils, followed by a systematic treatment, group by group. Only Seward in his *Plant Life Through the Ages* departed from this pattern in presenting a chronological sequence. In the present book, Meyen breaks with this tradition. Although having a basically biological approach, he reaches out into all aspects of the history of plant life and the wider implication of its study. Only half of the present work deals sequentially with fossil plant groups, treated systematically. The remainder then explores those topics which most other textbooks have incidentally dealt with, but which are generally either ignored or have only mentioned rather than explored: the problems of naming and classifying fragmentary plant fossils, their ecology; biogeography and palaeoclimatic significance and the contribution that they have made to the understanding of living plant morphology, and of the process of evolution.

The Biology and Evolution of Fossil Plants - Thomas N. Taylor 1993

Palaeobotany and Plant Evolution - Iqbal Hussain 2008-01-01

The original import of the word "plant evolution" - to unfold or to unroll, as a flower is unfolded - is too restricted, because, evolution is far more than the unfolding of something that already exists, as the germ develops and unfolds in the beauty of a rose; evolution is the incessant appearance of new qualities, new characters, new powers, new beauties, for which there is no antecedent in experience or no evident promise in the germ itself.

Paleobotany and Evolution of Plants - 1983

Paleobotany - Thomas N. Taylor 1981

Morphology and Evolution of Fossil Plants - Theodore Delevoryas 1962

Early Flowers and Angiosperm Evolution - Else Marie Friis 2011-08-18

The recent discovery of diverse fossil flowers and floral organs in Cretaceous strata has revealed astonishing details about the structural and systematic diversity of early angiosperms. Exploring the rich fossil record that has accumulated over the last three decades, this is a unique study of the evolutionary history of flowering plants from their earliest phases in obscurity to their dominance in modern vegetation. The discussion provides comprehensive biological and geological background information, before moving on to summarise the fossil record in detail. Including previously unpublished results based on research into Early and Late Cretaceous fossil floras from Europe and North America, the authors draw on direct palaeontological evidence of the pattern of angiosperm evolution through time. Synthesising palaeobotanical data with information from living plants, this unique book explores the latest research in the field, highlighting connections with phylogenetic systematics, structure and the biology of extant angiosperms.

Fundamentals of Palaeobotany - Sergei Meyen 2012-12-06

There have been at least ten English-language textbooks of palaeobotany since D. H. Scott published the first edition of *Studies in Fossil Botany* in 1900. Most have been written by scientists who were primarily botanists by training, and were aimed largely at a readership familiar with living plants. They tended to follow a general pattern of an introductory chapter on preservation of plants as fossils, followed by a systematic treatment, group by group. Only Seward in his *Plant Life Through the Ages* departed from this pattern in presenting a chronological sequence. In the present book, Meyen breaks with this tradition. Although having a basically biological approach, he reaches out into all aspects of the history of plant life and the wider implication of its study. Only half of the present work deals sequentially with fossil plant groups, treated systematically. The remainder then explores those topics which most other textbooks have incidentally dealt with, but which are generally either ignored or have only mentioned rather than explored: the problems of naming and classifying fragmentary plant fossils, their ecology; biogeography and palaeoclimatic significance and the contribution that they have made to the understanding of living plant morphology, and of the process of evolution.

A History of Plants in Fifty Fossils - Paul Kenrick 2020-03-20

An illustrated history of plants presented through the stories of 50 key

fossil discoveries This is the lively, fully illustrated story of plant life on Earth as revealed through some of the most significant fossil discoveries ever made. Beginning with the origins of plant life in the sea, where photosynthesis first evolved in bacteria, the book traces the evolution of land plants, ferns, conifers and their relatives, and flowering plants. Each fossil is depicted with stunning full-color photography alongside narrative from paleobotanist Paul Kenrick explaining its significance and revealing the story behind its discovery. Interspersed throughout the book are contextual "snapshots" of landscapes and environments at various periods of geological time, focusing on plants and plant-animal interactions. *A History of Plants in Fifty Fossils* is perfect for anyone interested in plants, fossils, and the stories they tell us about life on Earth.

Multicellularity - Karl J. Niklas 2022-06-07

Scholars consider the origins and consequences of the evolution of multicellularity, addressing a range of organisms, experimental protocols, theoretical concepts, and philosophical issues. The evolution of multicellularity raises questions regarding genomic and developmental commonalities and discordances, selective advantages and disadvantages, physical determinants of development, and the origins of morphological novelties. It also represents a change in the definition of individuality, because a new organism emerges from interactions among single cells. This volume considers these and other questions, with contributions that explore the origins and consequences of the evolution of multicellularity, addressing a range of topics, organisms, and experimental protocols. Each section focuses on selected topics or particular lineages that present a significant insight or challenge. The contributors consider the fossil record of the paleontological circumstances in which animal multicellularity evolved; cooption, recurrent patterns, modularity, and plausible pathways for multicellular evolution in plants; theoretical approaches to the amoebozoans and fungi (cellular slime molds having long provided a robust model system for exploring the evolution of multicellularity), plants, and animals; genomic toolkits of metazoan multicellularity; and philosophical aspects of the meaning of individuality in light of multicellular evolution. Contributors: Maja Adamska, Argyris Arnellos, Juan A. Arias, Eugenio Azpeitia, Mariana Benítez, Adriano Bonforti, John Tyler Bonner, Peter L. Conlin, A. Keith Dunker, Salva Duran-Nebreda, Ana E. Escalante, Valeria Hernández-Hernández, Kunihiko Kaneko, Andrew H. Knoll, Stephan G. König, Daniel J. G. Lahr, Ottoline Leyser, Alan C. Love, Raul Montañez, Emilio Mora van Cauwelaert, Alvaro Moreno, Vidyanand Nanjundiah, Aurora M. Nedelcu, Stuart A. Newman, Karl J. Niklas, William C. Ratcliff, Iñaki Ruiz-Trillo, Ricard Solé

Woody Plants - Evolution and Distribution Since the Tertiary - Friedrich Ehrendorfer 2013-11-11

Paleobotany has enormously expanded the documentation of fossil plant groups, floras and vegetation types, supporting its conclusions by technically much improved analyses of microfossils (pollen) and anatomical details. An increasing quantity and quality of all these informations from the geosciences is available when we follow the history of the biosphere up to the present. Simultaneously, research from the biosciences on the morphology, ecology, distribution, systematics and evolution of extant vascular plants, and on the ecogeographical differentiation of the vegetation cover of our planet, has made enormous progress. Thus, a synthetic geo- and bioscientific approach becomes more and more feasible and urgent for further advances in the many problems of common concern. A symposium organized by the "Deutsche Akademie der Naturforscher LEOPOLDINA", attractive to paleo- and neobotanists, stimulated the discussion between specialists of the two disciplines. The main results of the symposium are now presented in this volume: Sixteen international contributions outline the current knowledge about the historical differentiation and evolution of woody plant groups and forests, covering the whole biosphere. This survey, from the beginning of the Tertiary up to the present, is a first synthesis of relevant data from the geo- and biosciences

The Evolution of Plant Physiology - Alan R. Hemsley 2004-02-05

Coupled with biomechanical data, organic geochemistry and cladistic analyses utilizing abundant genetic data, scientific studies are revealing new facets of how plants have evolved over time. This collection of papers examines these early stages of plant physiology evolution by describing the initial physiological adaptations necessary for survival as upright structures in a dry, terrestrial environment. The Evolution of Plant Physiology also encompasses physiology in its broadest sense to include biochemistry, histology, mechanics, development, growth, reproduction and with an emphasis on the interplay between physiology, development and plant evolution. Contributions from leading neo- and palaeo-botanists

from the Linnean Society Focus on how evolution shaped photosynthesis, respiration, reproduction and metabolism. Coverage of the effects of specific evolutionary forces -- variations in water and nutrient availability, grazing pressure, and other environmental variables

A History of Plants in 50 Fossils - Paul Kenrick 2020-03

The Evolution of Plants - K. J. Willis 2002-01-10

This is a broad but provocative examination of the evolution of plants from the earliest forms of life to the development of our present flora. Taking a fresh, modern approach to a subject often treated very stuffily, the book incorporates many recent studies on the morphological evolution of plants, enlivens the subject with current research on ancient DNA and other biomolecular markers, and places plant evolution in the context of climate change and mass extinction. Also includes special Biome Maps, showing the flora on the Earth's surface at different geological ages. Written for a non-specialist audience.

Paleobotany And The Evolution Of Plants 2Ed - Wilson N. Stewart 2005

This new edition of a successful textbook describes and explains in a refreshingly clear way the origin and evolution of plants as revealed by the fossil record. It summarises paleobotanical information relevant to our present understanding of the relationships among the major plant groups, extant and extinct. As in the first edition, the text is profusely illustrated with line drawings and halftones. For those students with little knowledge of plant structure and morphology, there is a brief resume of these features of extant plants that will be needed to gain a better understanding of the fossil record. Summarising charts are also used to help students visualise the interpretative material. For this edition new material on the evolution of the angiosperms has been added, and there is a new chapter dealing with the paleoecology of ancient plants. The text has also been extensively updated to include new information on the methodology of cladistics.

Studies in Paleobotany - Henry Nathaniel Andrews 1966

Evolution and Plants of the Past - Harlan Parker Banks 1972

Paleobotany - Shripad N. Agashe 1997

Text book in paleobotany with special reference to India.

The Evolution of Plants and Flowers - Barry A. Thomas 1981

Cercidiphyllum and Fossil Allies - Valentin Abramovich Krasilov 2010

Evolutionary Trends in Flowering Plants - Armen Leonovich Takhtadzhian 1991

Takhtajan, one of the foremost authorities on flowering plant evolution, has brought together from the literature and his own studies interpretations of the origin and evolution of various vegetative and reproductive parts of flowering plants. Starting with growth habit, he continues through leaf and stem structure, including the origin of vessels, sieve tubes, and rays, to flowers. After tracing the possible origin of the flower, he discusses in detail the sepals, petals, stamens, and carpels, accounting for their variations in number of parts, fusion, position, and structure. The evolution and origin of the micro- and megagametophytes and the development of triple fusion are considered. The book ends with the developmental sequence of the fruit and seed types. Each chapter has its own extensive bibliography. Takhtajan has produced a book that will be essential in the library of any college where plant evolution is considered.-C. T. Mason Jr., University of Arizona--Choice Reviews.

Palaeobiology of Angiosperm Origins - Norman F. Hughes 1982-01-07

The evolutionary origin and early history of the angiosperms (or flowering plants), which are the dominant land plants today, has remained an unsolved problem since the time of Darwin. It has been referred to since those days as an 'abominable mystery', because neither direct ancestor nor an agreed date could be determined. Mr Hughes argues that previous approaches, mostly through botanical theory, have been inadequate and misleading. He suggests that the date is about 110 million years ago (in the Cretaceous period) and there is a good chance of ancestors being found if the correct approach is adopted to the study of other fossil plants of that period. Moreover, the study of plant microfossils in the past twenty years has made feasible a fuller geological study of other fossils. When this book was first published in 1976, several reviewers saw it as a timely book on a controversial subject.

The Emerald Planet - David Beerling 2017-05-12

Plants have profoundly moulded the Earth's climate and the evolutionary trajectory of life. Far from being 'silent witnesses to the passage of time', plants are dynamic components of our world, shaping the environment throughout history as much as that environment has shaped them. In *The Emerald Planet*, David Beerling puts plants centre stage, revealing the crucial role they have played in driving global changes in the environment, in recording hidden facets of Earth's history, and in helping us to predict its future. His account draws together evidence from fossil plants, from experiments with their living counterparts, and from computer models of the 'Earth System', to illuminate the history of our planet and its biodiversity. This new approach reveals how plummeting carbon dioxide levels removed a barrier to the evolution of the leaf; how plants played a starring role in pushing oxygen levels upwards, allowing spectacular giant insects to thrive in the Carboniferous; and it strengthens fascinating and contentious fossil evidence for an ancient hole in the ozone layer. Along the way, Beerling introduces a lively cast of pioneering scientists from Victorian times onwards whose discoveries provided the crucial background to these and the other puzzles. This understanding of our planet's past sheds a sobering light on our own climate-changing activities, and offers clues to what our climatic and ecological futures might look like. There could be no more important time to take a close look at plants, and to understand the history of the world through the stories they tell. Oxford Landmark Science books are 'must-read' classics of modern science writing which have crystallized big ideas, and shaped the way we think.

Transformative Paleobotany - Michael Krings 2018-07-14

Transformative Paleobotany: Papers to Commemorate the Life and Legacy of Thomas N. Taylor features the broadest possible spectrum of topics analyzing the structure, function and evolution of fossil plants, microorganisms, and organismal interactions in fossil ecosystems (e.g., plant paleobiography, paleoecology, early evolution of land plants, fossil fungi and microbial interactions with plants, systematics and phylogeny of major plant and fungal lineages, biostratigraphy, evolution of organismal interactions, ultrastructure, Antarctic paleobotany). The book includes the latest research from top scientists who have made transformative contributions. Sections are richly illustrated, well conceived, and characterize and summarize the most up-to-date understanding of this respective and important field of study. Features electronic supplements, such as photographs, diagrams, tables, flowcharts and links to other websites Includes in-depth illustrations with diagrams, flowcharts and photographic plates (many in color for enhanced utility), tables and graphs