

Biogas Vol 3 A Chinese Biogas Manual

This book derives an explicit analytical pattern (or framework) that permits the examination and optimization of biogas production systems. It provides a concise overview of the current status of biogas and biogas coupled agricultural systems in China, and introduces evaluation methods for energy efficiency, environmental emissions, economic performance and sustainability assessment approaches. Based on empirical studies, it also explores future options for the system development by focusing on emissions mitigation, biogas energy efficiency and system sustainability. Systematic methods of life cycle assessment and thermodynamic analysis may provide new angles for biogas system evaluation. The system discussed is not only a biogas producer, but also a biogas-linked ecological agricultural system, which has the potential to broaden the applicable scopes of renewable energy and eco-agricultural management. The comprehensive, in-depth knowledge and experience presented provide new analytical approaches for researchers in relevant fields and shed light on the construction and operation of emerging anaerobic digestion and biogas industries. This book is a valuable resource for researchers focusing on biogas system modeling, project managers and policymakers.

Volume 3 takes the subject of better land husbandry further. The book first points out the sort of things which have been, and are being used, but are failing to deliver what is required. It then explains the causes of erosion, the theory and practice of soil and water conservation, and practical and lasting ways to construct terraces, including such details as how to build different kinds of terrace walls. Nothing grows from the top down, as also with soil improvement. It explains in detail the way of achieving practical and sustainable soil and water conservation, practical ways in which farmers can themselves make and use practical and lasting ways to construct terraces, including such details as how to build different kinds of terrace walls.

Choosing appropriate practices and policies for biofuel production requires an understanding of how soils, climate, farm types, infrastructure, markets and social organisation affect the establishment and performance of these crops. The book highlights land use dynamics, cultivation practices related to conversion and wider impacts. It explores how biofuel production chain development is steered by emerging technologies and management practices and how both can be influenced by effective policies designed to encourage sustainable biofuel production. The book highlights major biofuel production chains including: cane cultivation in Brazil corn ethanol in the USA wheat and rapeseed in Europe oil palm in the Far East cane in Asia and Africa SRC and other lignocellulosic crops. In each case the development, cropping systems and impacts are discussed, system dynamics are shown and lessons drawn for the way things could or should change. Biofuel Cropping Systems is a vital resource for all those who want to understand the way biofuels are produced and how they impact other elements of society and especially how improvements can be made. It is a handbook for students, biofuel producers, researchers and policymakers in energy and agriculture.

This series started in 1981 with the Erice Seminars when the danger of a nuclear East-West confrontation was menacing the world. The volumes reproduce the crucial steps, from the Nuclear Winter to the Strategic Defense Initiative. After the collapse of the U.S.S.R., new emergencies are now to be faced such as the danger of proliferation of Weapons for Mass Destruction (WMD), the North-South confrontation on ecological problems and the new deal for Science and Technology to help developing countries in their struggle for a better standard of life. The Erice Seminars have attracted the attention of world leaders in Science, Technology and Culture. Contents: Conversion of Military

Resources (A Zichichi, E Teller, J-D Qian, E P Velikhov, W A Barletta & S Schriber)Improving Energy Efficiency (N Hingorani, L-G Yan et al & M Levine)Non-Fossil Energy Sources (S Golan, A J Glass, P de Laquil & Y-P Huo)Aids (J Esparza, R C Gallo, S-D Lu, G de Thé, G Ada, F Wong-Staal, D Zagury et al. & V Franchini)Regional World Lab Projects (G I Palshin, R A Gohogidze, A M Finkelshtein & M Zdanov)Environmental Monitoring (R Bojkov, N Moiseev & G Barenboim)Science and Technology for Developing Nations (T D Lee, K Siegbahn, J K D Söderman, G Visconti & E Boschi)The Problem of the Soil and the Population Increase: 6 Billion in the Year 2000 (A Zichichi & G-Z Zhou)Greenhouse Gases and the Ozone Problem (A T Crane, P-Q Chen, R Schock & M-X Wang)The Chemical Weapon Problem (Y-J Gu)The World Lab Branch in the USSR (E P Velikhov)Common Project Against Cosmic Objects (E Teller) keywords:

Bioenergy: Principles and Technologies introduces biomass energy resources and then elaborates on bioenergy technologies including biomass combustion, biogas production, biomass briquettes and biomass gasification. With a combination of theories, experiments and case studies, the book is an essential reference for bioenergy researchers, industrial chemists and chemical engineers.

This new volume of Chinese Research Perspectives on the Environment includes selected articles from the 2013 annual environmental report compiled by Friends of Nature, a leading environmental protection NGO in China, with contributions from academics, environmental protection activists, public service activists, and the media.

The Handbook of Clean Energy Systems brings together an international team of experts to present a comprehensive overview of the latest research, developments and practical applications throughout all areas of clean energy systems. Consolidating information which is currently scattered across a wide variety of literature sources, the handbook covers a broad range of topics in this interdisciplinary research field including both fossil and renewable energy systems. The development of intelligent energy systems for efficient energy processes and mitigation technologies for the reduction of environmental pollutants is explored in depth, and environmental, social and economic impacts are also addressed. Topics covered include: Volume 1 - Renewable Energy: Biomass resources and biofuel production; Bioenergy Utilization; Solar Energy; Wind Energy; Geothermal Energy; Tidal Energy. Volume 2 - Clean Energy Conversion Technologies: Steam/Vapor Power Generation; Gas Turbines Power Generation; Reciprocating Engines; Fuel Cells; Cogeneration and Polygeneration. Volume 3 - Mitigation Technologies: Carbon Capture; Negative Emissions System; Carbon Transportation; Carbon Storage; Emission Mitigation Technologies; Efficiency Improvements and Waste Management; Waste to Energy. Volume 4 - Intelligent Energy Systems: Future Electricity Markets; Diagnostic and Control of Energy Systems; New Electric Transmission Systems; Smart Grid and Modern Electrical Systems; Energy Efficiency of Municipal Energy Systems; Energy Efficiency of Industrial Energy Systems; Consumer Behaviors; Load Control and Management; Electric Car and Hybrid Car; Energy Efficiency Improvement. Volume 5 - Energy Storage: Thermal Energy Storage; Chemical Storage; Mechanical Storage; Electrochemical Storage; Integrated Storage Systems. Volume 6 - Sustainability of Energy Systems: Sustainability Indicators, Evaluation Criteria, and Reporting; Regulation and Policy; Finance and Investment; Emission Trading; Modeling and Analysis of Energy Systems; Energy vs. Development; Low Carbon Economy; Energy Efficiencies and Emission Reduction. Key features: Comprising over 3,500 pages in 6 volumes, HCES presents a comprehensive overview of the latest research, developments and practical applications throughout all areas of clean energy systems, consolidating a wealth of information which is currently scattered across a wide variety of literature sources. In addition to renewable energy systems, HCES also covers processes for the efficient and clean conversion of traditional fuels such as coal, oil and gas, energy storage systems, mitigation technologies for the reduction of environmental pollutants, and the development of intelligent energy systems. Environmental, social and economic impacts of energy systems are also addressed in depth.

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Published in full colour throughout. Fully indexed with cross referencing within and between all six volumes. Edited by leading researchers from academia and industry who are internationally renowned and active in their respective fields. Published in print and online. The online version is a single publication (i.e. no updates), available for one-time purchase or through annual subscription.

A special volume in the Chinese Research Perspectives on the Environment series, this English-language volume is an edited collection of articles from the Chinese-language volume of The Annual Review of Low-Carbon Development in China (2011-2012).

This four-volume set, edited by a leading expert in the field, brings together in one collection a series of papers that have been fundamental to the development of renewable energy as a defined discipline. Some of the papers were first published many years ago, but they remain classics in their fields and retain their relevance to the understanding of current issues. The papers have been selected with the assistance of an eminent international editorial board. The set includes a general introduction and each volume is introduced by a new overview essay, placing the selected papers in context. The range of subject matter is considerable, including coverage of all the main renewable technologies, the fundamental principles by which they function, and the issues around their deployment such as planning, integration and socio-economic assessment. Overall, the set provides students, teachers and researchers, confronted with thousands of journal articles, book chapters and grey literature stretching back decades, with a ready-made selection of and commentary on the most important key writings in renewable energy. It will be an essential reference for libraries concerned with energy, technology and the environment.

This book contains research on the chemistry of each step of biogas generation, along with engineering principles and practices, feasibility of biogas production in processing technologies, especially anaerobic digestion of waste and gas production system, its modeling, kinetics along with other associated aspects, utilization and purification of biogas, economy and energy issues, pipe design for biogas energy, microbiological aspects, phyto-fermentation, biogas plant constructions, assessment of ecological potential, biogas generation from sludge, rheological characterization, etc.

This Encyclopedia of Biotechnology is a component of the global Encyclopedia of Life Support Systems (EOLSS), which is an integrated compendium of twenty one Encyclopedias. Biotechnology draws on the pure biological sciences (genetics, animal cell culture, molecular biology, microbiology, biochemistry, embryology, cell biology) and in many instances is also dependent on knowledge and methods from outside the sphere of biology (chemical engineering, bioprocess engineering, information technology, biorobotics). This 15-volume set contains several chapters, each of size 5000-30000 words, with perspectives, applications and extensive illustrations. It carries state-of-the-art knowledge in the field and is aimed, by virtue of the several applications, at the following five major target audiences: University and College Students, Educators, Professional Practitioners, Research Personnel and Policy Analysts, Managers, and Decision Makers and NGOs.

Key features: Reviews the development of agroecology in China, including research, practice, management, and education regarding challenges for rural and agricultural progress Presents information from sources not readily available in the West about agricultural development in China during the last several decades Provides models and indicates starting points for future research and practice Addresses how to meet future challenges of agroecosystems from the field to the table in China from scientific, technological, and management perspectives During the past 30 years, industrialization has fundamentally changed traditional rural life and agricultural practices in China. While the incomes of farmers have increased, serious issues have been raised concerning the environment, resource depletion, and food safety. In response, the Chinese government and Chinese scientists encouraged eco-agriculture, the practice of

agroecology principles and philosophy, as a way to reduce the negative consequences of large-scale industrialized systems of farming. *Agroecology in China: Science, Practice, and Sustainable Management* represents the work of experts and leaders who have taught, researched, and expanded Chinese agroecology and eco-agriculture for more than 30 years. It reviews decades of agricultural change to provide an integrated analysis of the progress of research and development in agroecological farming practices. The book contains research on traditional and newly developed agricultural systems in China, including intercropping systems, rainfall harvest systems, and rice–duck, rice–fish, and rice–frog co-culture systems. It covers current eco-agriculture practices in the major regions of China according to climate conditions. The book closes with a discussion of the major technical approaches, necessary policy support, and possible major development stages that must occur to allow broader agroecological implementations toward the sustainability of future food systems in China. Presenting eco-agriculture systems that are somewhat unique in comparison to those of the United States, Latin America, and Europe, *Agroecology in China* gives insight on how Chinese agroecologists, under the political and cultural systems specific to China, have created a strong foundation for ecologically sound agroecosystem design and management that can be applied and adapted to food systems elsewhere in the world. By using selected regional examinations of agroecological efforts in China as examples, this book provides models of how to conduct research on a broad range of agroecosystems found worldwide.

Concepts, principles, history, classification, structure and function analysis of various models in the same production sector and in different sectors, at different scales, in mountain and dryland ecosystems. The book is aimed primarily at young post-graduate scientists in the disciplines or at agronomy, forestry, animal husbandry, land use management and ecology experts.

The Sanjiang Plain wetlands are among the most important wetlands in the People's Republic of China with unique habitats, species, and ecology. There is a considerable body of literature devoted to various aspects of the Sanjiang Plain wetlands including their ecological values. Building on lessons from the Sanjiang Plain Wetlands Protection Project supported by the Asian Development Bank and the Global Environment Facility---and based on a comprehensive literature review and discussions with experts who have been directly involved in wetland conservation efforts---this publication synthesizes current knowledge on the Sanjiang Plain wetlands, best practices, and options for achieving sustainable wetland management.

Two of the greatest current challenges are climate change (and variability) and food security. Feeding nine billion people by 2050 will require major efforts aimed at climate change adaptation and mitigation. One approach to agriculture has recently been captured by the widely adopted term of "Climate Smart Agriculture" (CSA). This book not only explains what this entails, but also presents practical on-the-ground studies of practices and innovations in agriculture across a broader spectrum, including agroecology and conservation agriculture, in less developed countries. It is shown that CSA is not a completely new science and a number of its recommended technologies have been used for some time by local farmers all over the world. What is relevant and new is 'the approach' to exploit their adaptation and mitigation potential. However, a major limitation is the lack of evidence-based knowledge that is necessary for policy makers to prepare strategies for adaptation and mitigation. This book assembles knowledge of CSA, agroecology and conservation agriculture, and perspectives from different regions of the world, to build resilient food systems. The first part analyzes

the concept, opportunities and challenges, and provides a global perspective, drawing particularly on studies from Africa and Asia. The second part of the book showcases results from various studies linked to soil, water and crop management measures from an ongoing program in India as well as experiences from other regions. The third section assesses the needs for an enabling policy environment, mainstreaming gender and some final recommendations for up-scaling and/or out-scaling innovations.

As China strives to significantly increase its economic output, the nation faces an acute deterioration of the physical resources from which this prodigious growth springs. Major problems include water shortages, the pollution of water, high levels of carcinogens in the air, accelerating erosion, and industrial pollution. Originally published in 1984, Vaclav Smil documents and evaluates China's environmental crisis. This title will be of particular interest for students of Environmental Studies and Development Studies.

Selected, peer reviewed papers from the 2012 International Conference on Sustainable Energy and Environmental Engineering (ICSEEE 2012), December 29 -30, 2012, Guangzhou, China. Volume is indexed by Thomson Reuters CPCI-S (WoS). The studies cover topics such as: Development and Utilization of Solar Energy, Development and Utilization of Biomass Energy, Development and Utilization of Wind Energy, Nuclear Energy, Hydrogen, Fuel Cell and Other New Energy, Energy Storage Technologies and Energy-Saving Technologies, Energy Materials and Energy Chemical Engineering, Energy Security and Clean Use, New Energy Vehicles and Electric Vehicles, Green Building, Energy-Saving Buildings and Construction Technology, Development and Management of the Energy and Resource Industry, Power System and Automation.

The future of China, India and Asia's other emerging economies and their ability to take a 'low-carbon' and 'climate-resilient' development path determine the future of global carbon emissions and climate change. Indeed, the battle to confront global climate change will be won or lost in Asia. The transition to a low-carbon, climate-resilient economy (LCE), which involves many steps towards improved energy efficiency, alternative energy sources and transport systems, sustainable land use, eco-friendly consumption and proactive adaptation, may be regarded as the world's fourth revolution, after the industrial revolution, agricultural revolution, and the information revolution. Asia is highly vulnerable to impacts of climate change. Yet because of its dynamic economies and massive populations, Asia offers the greatest opportunity for overcoming the trade-offs and pursuing low-carbon development pathways. With a growing consensus that there is limited time to avoid the worst impacts of climate change, scientists, engineers, policymakers, and economists across Asia have recently begun discussions on how Asia can make a transition to LCE. Most discussions, however, focused on transfer of technologies from developed to developing countries and overlooked other equally

important challenges such as financing, governance, and information dissemination. This book is the first to look at these neglected aspects of LCE and attempt to integrate both market-based and technology-based solutions into a comprehensive strategy to creating a roadmap for LCE in Asia. This book is an essential reading for economists, policy makers, practitioners, engineers and researchers concerned with climate change, energy production and development in Asia and the impacts and potential for the world.

This second part of the sixth volume of Joseph Needham's great enterprise is an account of the technological history of agriculture, with major sections devoted to field systems, implements and techniques (sowing, harvesting, storing) and crop systems (what has grown and where and how crops rotated).

Cactus plants are precious natural resources that provide nutritious food for people and livestock, especially in dryland areas. Originally published in 1995, this extensively revised edition provides fresh insights into the cactus plant's genetic resources, physiological traits, soil preferences and vulnerability to pests. It provides invaluable guidance on managing the resource to support food security and offers tips on how to exploit the plant's culinary qualities.

Advances in Renewable Energies and Power Technologies Volume 2: Biomass, Fuel Cells, Geothermal Energies, and Smart Grids examines both the theoretical and practical elements of renewable energy sources, covering biomass, fuel cells, geothermal energy, RES, distributed energy, smart grids, and converter control. Dr. Yahyaoui and a team of expert contributors present the most up-to-date information and analysis on renewable energy generation technologies in this comprehensive resource. This volume covers the principles and methods of each technology, an analysis of their implementation, management and optimization, and related economic advantages and limitations, in addition to recent case studies and models of each technology. Advances in Renewable Energies and Power Technologies: Volume 2: Biomass, Fuel Cells, Geothermal Energies, and Smart Grids is a valuable resource for anyone working in renewable energy or wanting to learn more about theoretical and technological aspects of the most recent inventions and research in the field. Offers a comprehensive guide to the most advanced contemporary renewable power generation technologies written by a team of top experts Discusses power control and limitations of each technology Includes global case studies and models to exemplify the technological possibilities and limitations of each power generation method

State–Society Relations and Governance in China, a wide-ranging collection of essays written by scholars from both inside and outside China, explores the complexity of the changing state-society relationship and the modes and practices of governance in China by combining theoretical exploration and empirical case studies.

This book is a printed edition of the Special Issue "BioEnergy and BioChemicals Production from Biomass and Residual Resources" that was published in Energies

Progress in Computational Physics is an e-book series devoted to recent research trends in computational physics. It contains chapters contributed by outstanding experts of modeling of physical problems. The series focuses on interdisciplinary computational perspectives of current physical challenges, new numerical techniques for the solution of mathematical wave equations and describes certain real-world applications. With the help of powerful computers and sophisticated methods of numerical mathematics it is possible to simulate many ultramodern devices, e.g. photonic crystals structures, semiconductor nanostructures or fuel cell stacks devices, thus preventing expensive and longstanding design and optimization in the laboratories. In this book series, research manuscripts are shortened as single chapters and focus on one hot topic per volume. Engineers, physicists, meteorologists, etc. and applied mathematicians can benefit from the series content. Readers will get a deep and active insight into state-of-the art modeling and simulation techniques of ultra-modern devices and problems. The third volume - Novel Trends in Lattice Boltzmann Methods - Reactive Flow, Physicochemical Transport and Fluid-Structure Interaction - contains 10 chapters devoted to mathematical analysis of different issues related to the lattice Boltzmann methods, advanced numerical techniques for physico-chemical flows, fluid structure interaction and practical applications of these phenomena to real world problems.

Cellulolytic Enzyme Production and Enzymatic Hydrolysis for Second-Generation Bioethanol Production, by Mingyu Wang, Zhonghai Li, Xu Fang, Lushan Wang and Yinbo Qu Bioethanol from Lignocellulosic Biomass, by Xin-Qing Zhao, Li-Han Zi, Feng-Wu Bai, Hai-Long Lin, Xiao-Ming Hao, Guo-Jun Yue and Nancy W. Y. Ho Biodiesel From Conventional Feedstocks, by Wei Du and De-Hua Liu Establishing Oleaginous Microalgae Research Models for Consolidated Bioprocessing of Solar Energy, by Dongmei Wang, Yandu Lu, He Huang and Jian Xu Biobutanol, by Hongjun Dong, Wenwen Tao, Zongjie Dai, Liejian Yang, Fuyu Gong, Yanping Zhang and Yin Li Branched-Chain Higher Alcohols, by Bao-Wei Wang, Ai-Qin Shi, Ran Tu, Xue-Li Zhang, Qin-Hong Wang and Feng-Wu Bai Advances in Biogas Technology, by Ai-Jie Wang, Wen-Wei Li and Han-Qing Yu Biohydrogen Production from Anaerobic Fermentation, by Ai-Jie Wang, Guang-Li Cao and Wen-Zong Liu Microbial Fuel Cells in Power Generation and Extended Applications, by Wen-Wei Li and Guo-Ping Sheng Fuels and Chemicals from Hemicellulose Sugars, by Xiao-Jun Ji, He Huang, Zhi-Kui Nie, Liang Qu, Qing Xu and George T. Tsao

This three-volume handbook contains a wealth of information on energy sources, energy generation and storage, fossil and renewable fuels as well as the associated processing technology. Fossil as well as renewable fuels, nuclear technology, power generation and storage technologies are treated side by side, providing a unique overview of the entire global energy industry. The result is an in-depth survey of industrial-scale energy technology. Your personal

ULLMANN'S: A carefully selected "best of" compilation of topical articles brings the vast knowledge of the Ullmann's encyclopedia to the desks of energy and process engineers. Chemical and physical characteristics, production processes and production figures, main applications, toxicology and safety information are all found here in one single resource. New or updated articles include classical topics such as coal technologies, oil and gas as well as cutting-edge technologies like biogas, thermoelectricity and solar technology. 3 Volumes

Winner of the 2013 James Beard Foundation Book Award for Reference and Scholarship, and a New York Times bestseller, *The Art of Fermentation* is the most comprehensive guide to do-it-yourself home fermentation ever published. Sandor Katz presents the concepts and processes behind fermentation in ways that are simple enough to guide a reader through their first experience making sauerkraut or yogurt, and in-depth enough to provide greater understanding and insight for experienced practitioners. While Katz expertly contextualizes fermentation in terms of biological and cultural evolution, health and nutrition, and even economics, this is primarily a compendium of practical information—how the processes work; parameters for safety; techniques for effective preservation; troubleshooting; and more. With two-color illustrations and extended resources, this book provides essential wisdom for cooks, homesteaders, farmers, gleaners, foragers, and food lovers of any kind who want to develop a deeper understanding and appreciation for arguably the oldest form of food preservation, and part of the roots of culture itself. Readers will find detailed information on fermenting vegetables; sugars into alcohol (meads, wines, and ciders); sour tonic beverages; milk; grains and starchy tubers; beers (and other grain-based alcoholic beverages); beans; seeds; nuts; fish; meat; and eggs, as well as growing mold cultures, using fermentation in agriculture, art, and energy production, and considerations for commercial enterprises. Sandor Katz has introduced what will undoubtedly remain a classic in food literature, and is the first—and only—of its kind.

Proceedings of the FISITA 2012 World Automotive Congress are selected from nearly 2,000 papers submitted to the 34th FISITA World Automotive Congress, which is held by Society of Automotive Engineers of China (SAE-China) and the International Federation of Automotive Engineering Societies (FISITA). This proceedings focus on solutions for sustainable mobility in all areas of passenger car, truck and bus transportation. Volume 3: Future Automotive Powertrains (I) focuses on: •Alternative Fuel and New Engine •Advanced Hybrid Electric Vehicle •Plug-in Electric Vehicle. Above all researchers, professional engineers and graduates in fields of automotive engineering, mechanical engineering and electronic engineering will benefit from this book. SAE-China is a national academic organization composed of enterprises and professionals who focus on research, design and education in the fields of automotive and related industries. FISITA is the umbrella organization for the national automotive societies in 37 countries around the world. It was founded in Paris in 1948 with the purpose of bringing engineers from around the world together in a spirit of

cooperation to share ideas and advance the technological development of the automobile.

The Future of Sustainability, the tenth and final volume of the Berkshire Encyclopedia of Sustainability, brings together essays from a group of renowned scholars and well-known environmentalist thinkers. Crucial topics are considered in terms of the future of humanity and its relationship with the natural world, from the outlook for nuclear energy, cities, energy, agriculture, water, food security, mobility, and migration; the role of higher education; and the concept of collective learning. The volume concludes with a resource guide for teaching materials at several levels, a directory of leading undergraduate- and graduate-level programs in sustainability, and a combined index of the 10-volume set.

The voices of experts and witnesses from the People's Republic of China itself describing and commenting upon the environment and protection measures in the PRC in 2005, from the public perspective.

The book analyzes energy technologies, business models and policies to promote sustainable development. It proposes a set of recommendations for further activities and networking on access to energy and renewable energies and promotes an integrated approach to sustainable resource management. The book discusses access to energy, as a precondition for socio-economic progress. It depicts the global dimension of the challenge in terms of access to electricity and other forms of energy in developing countries. The three main interlinked topics related to energy and sustainable growth are separately discussed: appropriate technologies for modern energy services, business models for the development of new energy markets, and policies to support new energy systems. The description of activities and programmes of some public and private Italian stakeholders is also included.

In this title, originally published in 1981, author Robert P. Taylor calls for a greater understanding of rural energy supply and consumption patterns in the developing countries. Here, Taylor specifically examines the rural energy development in China as it is the world's largest developing country in terms of population, and it has encountered many of the rural energy problems common in other developing countries. This study provides an analysis of China's rural energy economy from before 1949 to a general discussion of achievements in rural energy development and the rural energy economy in 1981. This is an ideal title for students interested in environmental studies and development studies.

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