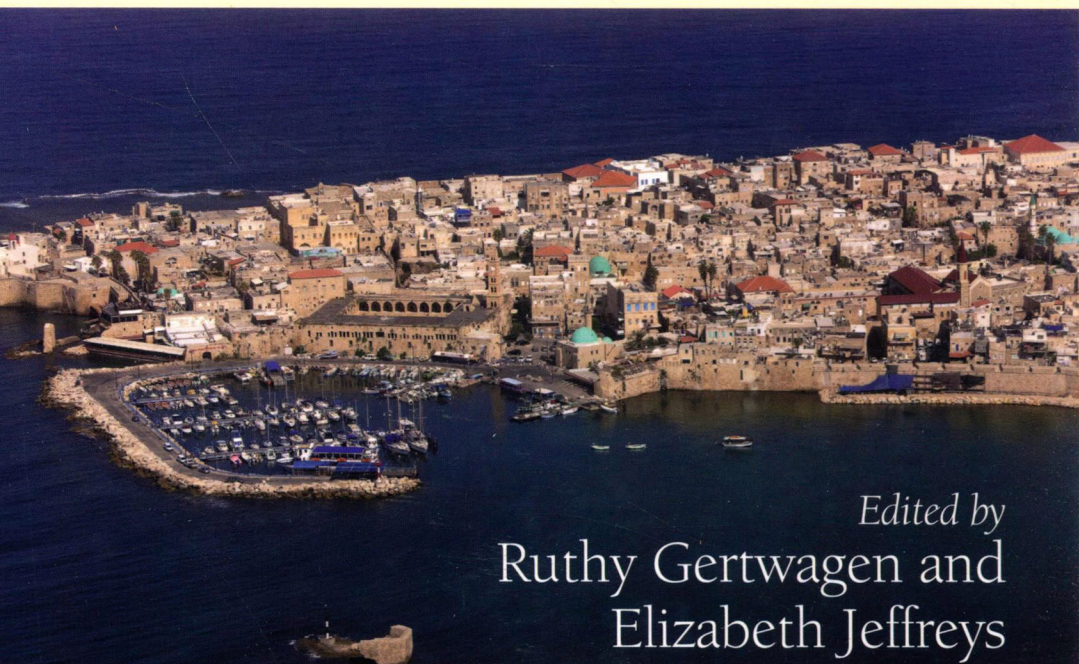


# Shipping, Trade and Crusade in the Medieval Mediterranean

Studies in Honour of John Pryor



*Edited by*  
Ruthy Gertwagen and  
Elizabeth Jeffreys

# Shipping, Trade and Crusade in the Medieval Mediterranean

Studies in Honour of John Pryor

*Edited by*

RUTHY GERTWAGEN

*Haifa University, Israel*

ELIZABETH JEFFREYS

*University of York, UK*



ASHGATE

© Ruthy Gertwagen, Elizabeth Jeffreys and the contributors 2012

All rights reserved. No part of this publication may be reproduced, stored in a retrieval system or transmitted in any form or by any means, electronic, mechanical, photocopying, recording or otherwise without the prior permission of the publisher.

Ruthy Gertwagen and Elizabeth Jeffreys have asserted their right under the Copyright, Designs and Patents Act, 1988, to be identified as the editors of this work.

Published by  
Ashgate Publishing Limited  
Wey Court East  
Union Road  
Farnham  
Surrey, GU9 7PT  
England

Ashgate Publishing Company  
Suite 420  
101 Cherry Street  
Burlington  
VT 05401-4405  
USA

[www.ashgate.com](http://www.ashgate.com)

### **British Library Cataloguing in Publication Data**

Shipping, trade and crusade in the medieval Mediterranean.

1. Shipping – Mediterranean Region – History – To 1500. 2. Mediterranean Region Commerce – History – To 1500. 3. Crusades. 4. Mediterranean Region – History – 476–1517.

I. Pryor, John H., 1947– II. Gertwagen, Ruth. III. Jeffreys, Elizabeth.  
909'.0982201–dc23

### **Library of Congress Cataloging-in-Publication Data**

Shipping, trade and crusade in the medieval Mediterranean / edited by Ruthy Gertwagen and Elizabeth Jeffreys.

p. cm.

English, French and Italian.

Includes index.

ISBN 978-1-4094-3753-6 (hardcover : alk. paper) – ISBN 978-1-4094-3754-3

(ebook) 1. Shipping – Mediterranean Region – History – To 1500. 2. Mediterranean Region – Commerce – History – To 1500. 3. Navigation – Mediterranean Region – History. 4. Crusades – History.

I. Gertwagen, Ruth. II. Jeffreys, Elizabeth.

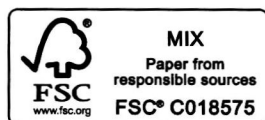
HE872.7.S55 2012

387.509182'20902–dc23

2011035397

ISBN 9781409437536 (hbk)

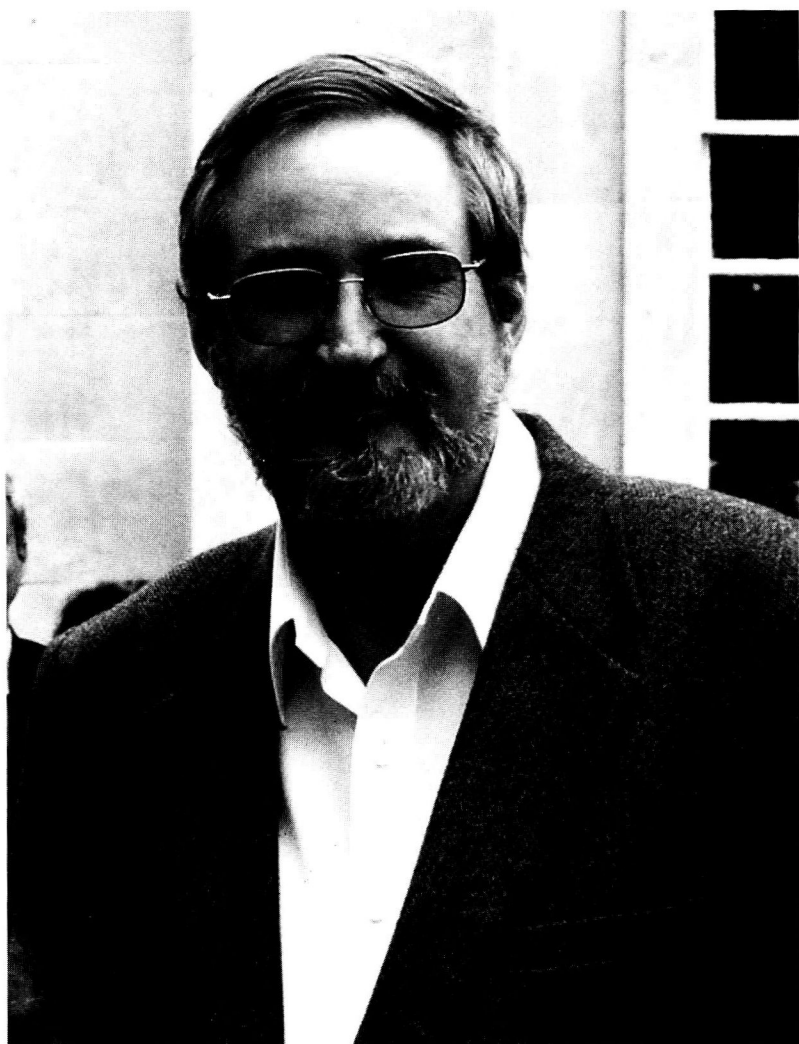
ISBN 9781409437543 (ebk)



Printed and bound in Great Britain by the  
MPG Books Group, UK.

SHIPPING, TRADE AND CRUSADE IN THE  
MEDIEVAL MEDITERRANEAN





John Pryor, *c.* 2008

# List of Contributors

**David Abulafia** is Professor of Mediterranean History at Cambridge University, and a Fellow of the British Academy. His most recent books are *The Discovery of Mankind: Atlantic encounters in the age of Columbus* (2008) and *The Great Sea: a human history of the Mediterranean* (2011).

**Gabriella Airaldi** is Lecturer in Medieval History in the Faculty of Arts and Philosophy in the University of Genoa. Her publications include *Studi e documenti su Genova e l'oltremare* (1974); *Guerrieri e mercanti: storie del medioevo genovese* (2004); and *Storia della Liguria* (2009–10).

**Bernard S. Bachrach** is Professor of History in the University of Minnesota. He founded *The Journal of Medieval Military History* and co-founded *Medieval Prosopography*. He has been a member of the Institute for Advanced Study, Princeton and was elected a Fellow of the Medieval Academy of America. Among his 18 books are *Merovingian Military Organization 481–751* (1972); *A History of the Alans in the West* (1973); *Early Medieval Jewish Policy in Western Europe* (1973); *Fulk Nerra: the neo-Roman consul (987–1040)* (1993); and *Early Carolingian Warfare* (2001).

**Michel Balard** is Professor Emeritus of Medieval History in University Paris 1 (Panthéon-Sorbonne). His research interests cover medieval Genoa and Cyprus, the Crusades, political and economic exchanges between East and West in the Middle Ages, and the Black Sea in the Middle Ages. His major publications include *Les Latins en Orient XIe–XVe s.* (2006), *La Méditerranée médiévale* (2006), *Les Marchands italiens en Chypre XIIIe–XVe s.* (2007) and *Le Moyen Age en Occident* (2008).

**Laura Balletto** is Lecturer in History in the Faculty of Arts and Philosophy in the University of Genoa. Author of over 200 publications, her interests revolve around late medieval Genoa and Liguria. Recent papers include “Tra Genova e l’isola di Cipro nel basso medioevo”, in L. Gallinari, ed., *Genova: una “porta” del Mediterraneo* (Genoa, 2005): 31–61; “L’impresa di Filippo Doria contro Tripoli (1355)”, *Africa: Rivista trimestrale di studi e documentazione dell’Istituto Italiano per l’Africa e l’Oriente* 63.2 (2008): 209–42; and “Ricordi genovesi di atti notarili redatti a Famagosta intorno alla metà del Trecento”, *Epeterida* 34 (Nicosia, 2008): 37–74.

**John E. Dotson** is Professor Emeritus of History, Southern Illinois University Carbondale (Carbondale, Illinois, USA). He is editor and translator of *Merchant Culture in Fourteenth Century Venice: the Zibaldone da Canal* (1994) and, with Aldo Agosto, editor and translator of *Christopher Columbus and his Family: the Genoese and Ligurian sources* (1998) as well as numerous articles and chapters including “The Genoese Civic Annals: Caffaro and his continuators”, in S. Dale, A. W. Lewin and D. J. Osheim, eds, *Chronicling History: chroniclers and historians in medieval and Renaissance Italy* (2007).

**John France** is Professor Emeritus at Swansea University; in 2011–12 he will hold the Charles Boal Ewing Chair in Military History at the United States Military Academy, West Point. He is joint editor of the *Journal of Medieval Military History*. His publications include *Victory in the East: a military history of the First Crusade* (1994); *Medieval Warfare 1000–1300* (2006); *Mercenaries and Paid Men: the mercenary identity in the Middle Ages* (2008); and *Perilous Glory: understanding Western warfare* (2011).

**Ruthy Gertwagen** is a Senior Lecturer in Maritime History and Underwater Archaeology of the Byzantine and Medieval Mediterranean and Black Sea at Haifa University and Oranim Academic College. Her research covers Venice and its maritime empire; maritime trade, naval warfare and piracy; port towns and engineering of ports; and marine environmental history and ecological history. Recent publications include “Corfu and its port in Venetian policy in the fourteenth and early fifteenth centuries”, *Journal of International Maritime History* 19.1 (2007): 181–210; “The contribution of Venice’s colonies to its naval warfare in the Eastern Mediterranean in the fifteenth century”, in R. Cancilla, ed., *Mediterraneo in Armi (secc. XV–XVIII)* (Palermo, 2007): 113–73; and “Bridging over ‘stormy gaps’ between humanities and science in marine environmental history’s and marine ecological history’s methodology”, in *When Humanities Meet Ecology. Historic changes in the Mediterranean and Black Sea marine biodiversity and ecosystems since the Roman period until nowadays. Languages, methodologies and perspectives* (Rome, 2011): 13–23.

**David Jacoby** is Emeritus Professor in the Department of History of the Hebrew University, Jerusalem.

**Elizabeth Jeffreys** is Bywater and Sotheby Professor of Byzantine and Modern Greek Language and Literature Emerita in the University of Oxford, and Emerita Fellow of Exeter College, Oxford.

**Sergei Karpov** is Dean of the Faculty of History, Moscow Lomonosov University and a corresponding member of the Russian Academy of Sciences. His main research interests cover Byzantium, the Black Sea and Italy in the thirteenth to fifteenth centuries. His major publications include *History of the Empire of*

*Trebizond* (2007; in Russian); *La navigazione veneziana nel Mar Nero, XIII–XV sec.* (2000); *Latin Romania* (2000; in Russian); *L'impero di Trebisonda, Venezia, Genova e Roma, 1204–1461: rapporti politici, diplomatici e commerciali* (1986). He is editor of *History of the Middle Ages*, in two volumes and seven editions (1997–2010; in Russian).

**Benjamin Z. Kedar**, Professor Emeritus of History at the Hebrew University of Jerusalem and Vice-President of the Israel Academy of Sciences and Humanities, has been working on merchants' mentality and Christian-Muslim relations in medieval times, as well as on issues of recent history. His latest book, written with Peter Herde, is *A Bavarian Historian Reinvents Himself: Karl Bosl and the Third Reich* (2011).

**Yaacov Lev** is Professor of Islamic Medieval History at Bar Ilan University. He is the author, *inter alia*, of *State and Society in Fatimid Egypt* (1990) and "The jihad of sultan Nur al-Din of Syria (1146–74): history and discourse", *Jerusalem Studies in Arabic and Islam* 35 (2008): 228–84.

**Thomas F. Madden** is Professor of Medieval History and Director of the Center for Medieval and Renaissance Studies at Saint Louis University (Saint Louis, Missouri, USA). His research focuses on the medieval Mediterranean, with particular emphasis on the crusading movement and Venice. His major publications include *The New Concise History of the Crusades* (2005), *Enrico Dandolo and the Rise of Venice* (2003), and (with Donald E. Queller) *The Fourth Crusade: the Conquest of Constantinople* (1997).

**Hadas Mor** has recently completed research for her PhD in the Department for Maritime Civilizations, at the University of Haifa, Israel. She specializes in nautical archaeology, and has participated and led several excavation seasons in Dor (Tantura) Lagoon, Israel. She was also among the reconstruction team of the Ma'agan Mikhael Shipwreck, currently exhibited in the Hecht Museum, Haifa, Israel. Her major publications include "The carpenters' tool-marks: their significance in ancient boatbuilding", in Y. Kahanov, E. Linder and J. Tresman, eds, *The Ma'agan Mikhael Ship: the recovery of a 2400-year-old merchantman. Final report, vol. 2* (2004): 165–81 and "The Dor 2001/1 shipwreck: hull construction report", in P. Pomey, ed, *Transferts technologiques en architecture navale méditerranéenne de l'antiquité aux temps modernes: identité technique et identité culturelle. Actes de la Table Ronde d'Istanbul 2007* (2010): 87–99.

**Lawrence V. Mott** is a Senior Research Fellow with the Center for Early Modern History at the University of Minnesota. He is the author of *Sea Power in the Medieval Mediterranean: the Catalan-Aragonese fleet during the war of the Sicilian Vespers* (2003) and *The Development of the Rudder: a technological tale* (2007), as well as several articles in refereed journals. His primary interests focus

on the medieval Mediterranean and specifically on maritime trade and cultural interactions.

**Alan V. Murray** is Senior Lecturer in Medieval Studies at the University of Leeds. He has published extensively on the crusades to the Levant and the Baltic region, on the history of Outremer and medieval warfare. He is author of *The Crusader Kingdom of Jerusalem: a dynastic history, 1099–1125* (2000) and editor of the four-volume reference work *The Crusades: an encyclopedia* (2006) as well as several collections of essays on the crusades.

**Mark Gregory Pegg** is Professor of History at Washington University in St Louis. He is the author of *The Corruption of Angels: the Great Inquisition of 1245–1246* (2001), *A Most Holy War: the Albigensian Crusade and the Battle for Christendom* (2007), and *Beatrice's Last Smile: a history of the medieval world, 300–1600* (2012).

**Amanda Power** is a lecturer in Medieval History at the University of Sheffield. Her monograph, *Roger Bacon and the Defence of Christendom*, is forthcoming with Cambridge University Press. In addition to her work on Roger Bacon, she has published studies exploring the intellectual, imaginative and religious life of the mendicant orders, especially within the context of their missionary activities. She is currently preparing a new study of the development of the Franciscan order and its involvement in the affairs of the Latin West between ca. 1239–ca. 1274.

**Jonathan Riley-Smith** is Dixie Professor Emeritus of Ecclesiastical History, University of Cambridge.

**Richard W. Unger** is a Professor Emeritus of the History Department of the University of British Columbia in Vancouver, Canada. His research has concentrated on technical change in early modern Europe and its relationship to economic development as well as on sources of information from the period about changing methods of production. His recent publications include *Ships on Maps: pictures of power in Renaissance Europe* (2010) and *Beer in the Middle Ages and the Renaissance* (2004). He has contributed to and edited *Shipping Efficiency and Economic Growth 1350–1850* (2011) and edited, with Richard Talbert, *Cartography in Antiquity and the Middle Ages: fresh perspectives, new methods* (2008). A collection of some of his papers appeared as *Ships and Shipping in the North Sea and Atlantic, 1400–1800* (1998). He also recently edited *Britain and Poland-Lithuania: contact and comparison from the Middle Ages to 1795* (2008).



# John Pryor: A Tribute

Ruthy Gertwagen and Elizabeth Jeffreys

Colleagues, friends and former students of John Pryor would like to offer him this collection of essays as an act of homage, in acknowledgement of his pioneering achievements in expanding our understanding of the maritime history of the Mediterranean in the Middle Ages.

All too frequently maritime history is considered a highly specialized field that is focused only on underwater archaeology and the technical aspects of seafaring and ships. Such an attitude is born of ignorance combined with the oft-denied but all too prevalent tendency to compartmentalize fields of study and periods of history. Dealing with the maritime aspects of history does indeed require specific skills, such as knowledge of oceanography, naval architecture and the marine engineering of ports, though not every historian writing on themes relating to the sea can be considered a maritime historian. These skills are merely tools to enable the scholar to understand and interpret the artefacts and historical documents that reveal the vast and varying roles of the sea in daily life, affecting politics, economics and trade, warfare and logistics, the marine and coastal environment, cultural interactions, and so forth. Of course every field of study requires particular skills; what counts, however, is the scholar's ability to extend these skills from the narrow limits of a single specialism and to display a comprehensive picture of a period. It is a breadth of approach of this sort that marks Pryor's work, beginning with his well-known book *Geography, Technology, and War: studies in the maritime history of the Mediterranean 649–1571* (1988). Here, looking at the *longue durée*, he explores the interaction between certain aspects of the physical geography of the Mediterranean Sea and the capabilities of maritime technology. He examines how the nexus between physical geography and technology affected historical events, moulding conflict and competition, war and trade. With the constraints of geography, meteorology, and naval technology clearly laid out, Pryor proceeds to a series of assessments of their impact on the commercial and military struggles between Christian and Islamic powers throughout the period. His work is based on a wide array of materials: the writings of medieval chroniclers and travellers, the discoveries of maritime archaeologists, the compilations of oceanographic and meteorological data, and a thorough survey of modern scholarship.

This book, along with many other of Pryor's studies on the medieval Mediterranean (he has published to date five books and around 90 articles), disproves two conservative views. First, his *oeuvre* demonstrates that a scholar can successfully tackle issues from more than one region over a broad time-span – in this case Byzantium, the Crusading movement, the Moslem and Early Modern

European communities. Second, that maritime history possesses both a multi- and an inter-disciplinary character – a distinction not recognized by all scholars – and cannot be divorced from general history. Indeed, in 2008 Pryor's scholarship was publically recognized as outstanding by his election to the prestigious Australian Academy of the Humanities.

Pryor's list of publications shows that his interest in maritime history was first concerned with the medieval Mediterranean economy. He began with a particular interest in trade and commercial law as revealed by two notaries in Southern France, one from the thirteenth century in Marseille and the other in fifteenth-century Aubenas. His doctoral thesis, completed in 1973 at the Center of Medieval Studies in the University of Toronto, under the supervision of Professor Andrew Watson, dealt with the operation of "Commenda" partnerships in Mediterranean maritime commerce during the thirteenth century. His sources were the notarial records of commercial contracts found in the Cartulary of Giraud Amalric of Marseilles in the Archives Communales de la Ville de Marseille and dated between March and July 1248. This, the oldest surviving cartulary from the territories of modern France, is one of the most informative notarial cartularies for the study of medieval commerce in the Mediterranean. In his publications on the subject between 1974 and 1981 Pryor, whilst illuminating the notarial methods involved, discussed the economic and commercial environment that led to the "commenda", the framework of business contracts in general and their development throughout the Middle Ages within the context of Roman law and Germanic law. Furthermore, he did not confine himself to theory and dry data. He describes the urban layout of Marseille as well as its social and economic structures and the life within which the notarial acts were practised. A hint of things to come, he relates the role played by ships, as revealed by the city statutes.

In these studies on notarial acts, as well as in his 1997 publication on unedited commercial charters from the Manduel family of Marseilles, Pryor demonstrates the skills that are required from, but not always demonstrated by, historians who claim to do original work on medieval subjects. He demonstrates knowledge of medieval and modern languages, palaeographic and archival expertise, the ability to analyse and interpret the material uncovered and, most importantly, a high competence in making the results deepen our understanding of the political, social and economic context of the period under discussion. Pryor currently continues to bring these technical skills to bear on a rather different topic, the edition with translation and commentary of a somewhat mysterious *excitatorium* to the Third Crusade, the *Libellus de expugnatione Terre Sancte per Saladinum* (2010).

Pryor's major linguistic skills are in Latin. He points out, however, that since much Latin business vocabulary developed under the influence of Arabic, Greek and vernacular languages, it is frequently necessary to have recourse to Greek, Arabic or vernacular Latin dictionaries, languages which would also have been current in the political and cultural milieu of the Crusader period. Rather than seeing this multilingual situation as a barrier, he has seen it as an opportunity for collaboration with others, especially in his *magnum opus* on the dromon, when

he joined forces with Elizabeth Jeffreys, a Byzantine philologist who edited and translated the relevant Greek texts that support Pryor's wide-ranging analysis, while Ahmad Shboul, an Arabist, edited and translated some key Arabic material.

After completing his doctoral studies Pryor returned to his native Australia, taking up a lectureship in the University of Sydney. There he taught in the Department of History from 1974 to 1997 and then from 1997 to 2010 in the newly founded Centre for Medieval Studies. From mid-2007 until his retirement in 2010 he served as the Director of the Centre, where he is now an Honorary Associate Professor. The courses he taught over the years within the framework of the Department of History and the Centre went far beyond medieval and early modern maritime history. For undergraduates the topics included medieval economic history and trade and many aspects of the Crusades, covering Jihad as well as Crusade. In the Centre he both co-ordinated and contributed to a broad range of courses, notably on the written record of the Middle Ages and on medieval literary and artistic genres. During his term of office he encouraged the University of Sydney Rare Books and Special Collections Library in their efforts to obtain facsimiles from the Vatican archives of trial documents regarding the Order of the Templars, which have sparked the interest of a new generation of graduate students.

Topics relating to the Crusades have in later years occupied a great deal of Pryor's research, but not their maritime aspects only: he is as much concerned with politics, diplomatic relations and warfare in general. This is a thread that reappears in a recently completed study which deals with the relationship between Alexios I Komnenos and Bohemond of Taranto during the First Crusade. Pryor claims that this relationship affects our entire understanding of the Crusade, at least up to the siege of Antioch. The combination of his Crusading interests and his major contributions to the field of maritime history will culminate in another large project on which he is working at present – a study of the Crusades' maritime history.

Pryor's research is underpinned by journeys to the Mediterranean, most often to Israel, the historic homeland of the Crusader Kingdom – although he also makes forays elsewhere, to Istanbul in Turkey, to Europe, to the UK and to the USA. Since his first visit to Israel between January and July 1987 when he was Visiting Fellow in the Institute for Advanced Studies at the Hebrew University of Jerusalem, within the framework of the international research group on the Crusades, Pryor returns to the Mediterranean whenever conditions permit, despite the enormous distance that separates Australia and the Mediterranean. On these occasions he visits sites of historical and archaeological relevance, studies the geography and topography of the area, both inland and on the coast, and consults with local scholars. Indeed, one of the features that characterize Pryor's work is his readiness to leave his armchair more often than many European scholars of the Crusader period. His fieldwork contributes to his informed evaluation of the environment in which events unfolded, and deepens his analyses of the politics, strategies, tactics and logistics involved. The results of his last visit are now being processed in his study on the siege of Acre during the Third Crusade,

to be included in his forthcoming book on Crusading maritime history. The first part of this study, grounded in an on-site investigation of the battleground on the plain of Acre, analyses the maritime logistics of the siege. Pryor, however, claims that this apocalyptic event belongs exclusively neither to military nor to naval history. Resolving itself into a monumental struggle between two civilizations and religions, the siege drew heavily on the emotions apparent on both sides in the years between 1189 and 1191: in Pryor's opinion, this was the climactic event of the whole history of the Crusades and arguably of the entire twelfth and thirteenth centuries. Medieval historiography supports this idea, even if modern historiography does not. Once again Pryor shows that maritime history cannot be divorced from general history.

Pryor has a strong need to "feel and touch" history in order to understand its processes, especially when documentary evidence is obscure, as it is for the technical aspects of ship construction. This has led him to become a carpenter who builds accurate scale models following the details in the available documents. He has thus been able to analyse the performance capabilities and limitations of the ships used in medieval trade: over the years the small lake in front of Sydney University has been the scene of several dramatic small-scale maritime disasters! Many of the drawings that accompany his essays on ships are based on trials that used his models. The value of this method was especially clear in the nearly 20 years he spent studying the Byzantine dromon. Many of the technical terms found in the tenth-century nautical texts on the construction of the dromon made no sense until explored through a model. From this practical base there emerged in 2006 his major study, already mentioned, which, embracing the logistical problems and strategic objectives of medieval naval warfare, has contextualized the operational and technological history of the Byzantine navy from the sixth century to the Fourth Crusade.

Ever the practical handyman, Pryor has performed a further signal service to the study of medieval warfare by highlighting the need to pay attention to the logistics of movements of men and armaments. All too often battle studies deal with clashes on the field and the tactics involved, whilst omitting consideration of the practicalities – and costs – of supplying large bodies of men and animals with sufficient food, fodder and water. This applies to both terrestrial and naval warfare. In 2002 Pryor conducted an international workshop in the Centre of Medieval Studies at Sydney University with 12 scholars who were specialists in various fields that impinged on Byzantine, Christian and Moslem medieval history and culture. The results of this initial step to tackle logistical matters were assembled in Pryor's pioneering edited volume, *Logistics of Warfare in the Age of the Crusade* (2006). The issues covered stretch far beyond the Crusades and deal with problems of logistics in the Byzantine, Moslem and the later medieval world. Pryor claims that most of the "why" and "what" questions regarding the Crusades have already been resolved and that the most important advances in Crusading studies and related fields will be made through answers to "how": how did the human endeavour associated with the Crusades and their related military, naval,

and commercial activities achieve, or fail to achieve, the desired goals. He may well be right.

Pryor has retired at the age compelled by Australian law, long before there is any diminution in his energy. He has years before him in which to devote himself to his research without the stimulating distraction of teaching (or the less stimulating demands of university administration). Based on the evidence so far, one can safely expect that the books already in the pipeline will continue to shed new light on the medieval Mediterranean – providing, of course, Pryor can resist the lure of a fishing rod, a small boat and the golf course.



# The Publications of John Pryor<sup>1</sup>

**1974**

“Stephanus Demonasterio and the notariat at Aubenas in the early fifteenth century”, *Medieval Studies* 36: 28–55.

**1975**

“The working method of a thirteenth-century French notary: the example of Giraud Amalric and the (*commenda*) contract”, *Medieval Studies* 37: 433–44. Reprinted in *Commerce, Shipping and Naval Warfare in the Medieval Mediterranean* (London, 1987): no. I.

**1977**

“The origins of the *Commenda* contract”, *Speculum*, 52: 5–37. Reprinted in *Commerce, Shipping and Naval Warfare in the Medieval Mediterranean* (London, 1987): no. II.

**1980**

“Foreign policy and economic policy: the Angevins of Sicily and the economic decline of southern Italy, 1266–1343”, in L. O. Frappell, ed., *Principalities, Powers and Estates: studies in medieval and early modern government and society* (Adelaide): 43–55.

**1981**

*Business Contracts of Medieval Provence: selected notulae from the cartulary of Giraud Amalric of Marseilles, 1248* (Pontifical Institute of Medieval Studies; Toronto).

**1982**

“Transportation of horses by sea during the era of the Crusades: eighth century to 1285 AD”, *Mariner's Mirror* 68: 9–27 and 103–25. Reprinted in *Commerce, Shipping and Naval Warfare in the Medieval Mediterranean* (London, 1987): no. V, and J. France, ed., *Medieval Warfare 1000–1300* (Aldershot, 2006): 524–68.

---

<sup>1</sup> The editors are grateful to Conal Condren and Alan Murray, as well as to John Pryor himself, for assistance in compiling this list, but accept all responsibility for omissions. The only deliberate omission is of reviews, of which John has written many – notably during his years as Reviews Editor, between 1988 and 1996, of *Parergon* (Journal of the Australian and New Zealand Association for Medieval and Renaissance Studies).

**1983**

“Mediterranean commerce in the Middle Ages: a voyage under contract of *Commenda*”, *Viator* 14: 133–94. Reprinted in *Commerce, Shipping and Naval Warfare in the Medieval Mediterranean* (London, 1987): no. III.

“The naval battles of Roger of Lauria”, *Journal of Medieval History* 9: 179–216. Reprinted in *Commerce, Shipping and Naval Warfare in the Medieval Mediterranean* (London, 1987): no. VI and S. Rose, ed., *Medieval Ships and Warfare* (Aldershot, 2008): 295–332.

**1984**

“The naval architecture of Crusader transport ships: a reconstruction of some archetypes for round-hulled sailing ships”, *Mariner’s Mirror* 70: 171–219, 275–92, and 363–86. Reprinted in *Commerce, Shipping and Naval Warfare in the Medieval Mediterranean* (London, 1987): no. VII.

“The oaths of the leaders of the First Crusade to emperor Alexius I Comnenus: fealty, homage – πίστις, δουλεία”, *Parergon*, n.s. 2: 111–41.

“*Commenda*: the operation of the contract in long-distance commerce at Marseilles during the thirteenth century”, *Journal of European Economic History* 13: 397–440. Reprinted in *Commerce, Shipping and Naval Warfare in the Medieval Mediterranean* (London, 1987): no. IV.

**1985**

“The historical foundations of a feudal mode of production”, in E. Leach, S. N. Mukherjee and J. Ward, eds, *Feudalism: comparative studies* (Sydney): 66–86.

**1986**

“The duration of water before putrefaction in the Middle Ages”, *Mariner’s Mirror* 72: 242–3.

**1987**

*Commerce, Shipping, and Naval Warfare in the Medieval Mediterranean* (Variorum Collected Studies 259; London).

“The voyage of Jacques de Vitry from Genoa to Acre, 1216: juridical and economic problems in medieval navigation”, in M. J. Pelaez, ed., *Derecho de la navegación en Europa. Homenaje a F. Valla i Taberner* (Barcelona): 1689–714.

**1988**

*Geography, Technology and War: studies in the maritime history of the Mediterranean, 649–1571* (Cambridge). Reprinted in paperback (Cambridge, 1992). Turkish translation: *Akdeniz’de Coğrafya, Teknoloji ve Savasc: Arapalar, Bizanslılar, Batılilar ve Türkler*, trans F. and T. Tayanç (Istanbul, 2004).

“*In subsidium Terrae Sanctae*: exports of foodstuffs and war materials from the Kingdom of Sicily to the Kingdom of Jerusalem, 1265–1284”, *Asian and African*

*Studies* 22: 127–46. Hebrew translation in B. Z. Kedar et al., eds, *Commerce in Palestine Throughout the Ages: Studies* (Jerusalem, 1990): 260–79.

## 1989

“Winds, waves, and rocks: the routes and the perils along them”, in K. Friedland, ed., *Maritime Aspects of Migration* (Cologne): 71–85.

“The voyage of Rutilius Namatianus: from Rome to Gaul in 417 CE”, *Mediterranean Historical Review* 4: 271–80.

## 1990

“The medieval Muslim ships of the Pisan bacini”, *Mariner's Mirror* 76: 99–113 (with S. Bellabarba).

“The naval architecture of Crusader transport ships and horse transports revisited”, *Mariner's Mirror* 76: 255–73.

## 1991

“Medieval Canon Law and the Jews. Review article of W. Pakter, *Medieval Canon Law and the Jews*”, *Journal of Religious History* 16: 339–42.

## 1992

“The *Eracles* and William of Tyre: an interim report”, in B. Z. Kedar, ed. *The Horns of Hattin* (Jerusalem and London): 270–93.

“The Crusade of Emperor Frederick II, 1220–29: the implications of the maritime evidence”, *The American Neptune* 52: 113–32.

## 1993

“The galleys of Charles I of Anjou, King of Sicily: ca 1269–84”, *Studies in Medieval and Renaissance History*, n.s. 14: 33–103.

## 1994

“The voyages of Saewulf”, in R. B. C. Huygens, ed., *Peregrinationes tres: Saewulf, John of Würzburg, Theodericus* (Corpus Christianorum. Continuatio medievalis, 139; Turnhout, 1994): 32–57.

“The Mediterranean Round Ship”, in R. W. Unger, ed., *Cogs, Caravels and Galleons: the sailing ship 1000–1650* (London): 59–76.

## 1995

“From dromon to galea: Mediterranean bireme galleys AD 500–1300”, in J. Morrison, ed., *The Age of the Galley: Mediterranean oared vessels since pre-classical times* (London): 101–16.

“The geographical conditions of galley navigation in the Mediterranean”, in J. Morrison, ed., *The Age of the Galley: Mediterranean oared vessels since pre-classical times* (London): 206–16.