

# Bulletin of the Geological Society of Norfolk

No. 21 (1972)

Published April 1972

---

## CONTENTS

---

	Page
Editorial	1
Funnell, B.M.	
The History of the North Sea.	2
Bradshaw, M.	
Geology in a College of Education.	11
West, R.G.	
The stratigraphical position of the Norwich Crag in relation to the Cromer Forest Bed Series.	17
Lord A.R.	
A preliminary account of a research borehole at Syleham, Suffolk.	25
Craig-Smith, S.J. and Cambers, G.	
Report on a field meeting to the Norfolk coast at Yarmouth and Overstrand. (Summary account of field trip, 1971).	29
Cambridge, P.G.	
Report on Field Meeting to the Norfolk coast. (Summary account of field trip, with the Conchological Society, 1971).	41

---

The Geological Society of Norfolk exists to promote the study and understanding  
of geology in East Anglia, and holds meetings throughout the year.



Click here, to order printed copy of the Bulletin.  
Please, specify the issue or year required.

Back copies of the Bulletin cost £3.50 each (members); £10.00 each (non-members).

For membership details consult our web site <http://www.norfolkgeology.co.uk>

---

## THE HISTORY OF THE NORTH SEA

*B.M. Funnel*

School of Environmental Sciences,  
University of East Anglia, Norwich, NR4 7TJ, UK.

### # INTRODUCTION

*At the end of the Cretaceous times the North Sea Basin was defined in very much its present form. Since then it has accumulated up to 3000 m of sediment in its northern part, and up to 1000 m in the south (Funnel, 1971).*

*At first the Palaeocene sea was relatively cool, as witnessed by the presence of such bivalve molluscan genera as *Artica* and *Macoma* in the Thanet Sands of the London Basin. During the Eocene, however, conditions became sub-tropical, at least in the SW part of the North Sea. At that time the Wealden Island was not present, and the London and Hampshire Basins jointly accumulated muddy sediments on the NW shore of an otherwise clear and broad straits opening directly into the Atlantic. These straits were bordered on their SE side by the lagoons and mainly clear seas of the Paris Basin. Along the shores of the straits, and extending into the SW part of the North Sea, lived sub-tropical marine forms such as large bivalve and gastropod molluscs (including volutes and cowries), and large Foraminifera; onshore palm trees flourished, whose remains are now regularly washed from the London Clay cliffs of the Isle of Sheppey. Further into the North Sea, in the equivalent deposits of Denmark, the sub-tropical influences are less evident.*

# No formal abstract available for this paper. (Presidential address, 1970)

Bull. geol. Soc. Norfolk (for 1972) **21**, 2-10. (Published April 1972)

Page 1 of 1

Website design and funding by:

UK Fossils [www.ukfossils.co.uk](http://www.ukfossils.co.uk) and UKGE [www.ukge.co.uk](http://www.ukge.co.uk)



[www.norfolkgeology.co.uk](http://www.norfolkgeology.co.uk)

---

## GEOLOGY IN A COLLEGE OF EDUCATION

*M. Bradshaw*

College of St. Mark and St. John,  
Chelsea, London, UK.

### # INTRODUCTION

*A tutor in a college of education obtains a wider view of the educational field than the individual school teacher, and it is exciting to see the way in which geology is becoming an integral part of the curriculum in so many schools. This process is reflected in the increasing numbers and calibre of students applying for places in the colleges which offer courses in geology leading to honours degrees in education. There are now at least six such colleges; some of these, together with an increasing number of university institutes, offer geology as a method option in the postgraduate certificate course.*

*The subject is attaining a status of acceptability, and it must now begin to adopt a more rigorous framework which will make it educationally viable. Those of us working in colleges of education have a privileged position of being able to survey, and to participate in, the developments taking place at the moment.*

*The most immediate challenge comes from our students teaching the subject in schools. What is the best way to approach the teaching of geology? Where can they obtain the supplies of necessary materials? The topics we discuss with them range from the philosophical working basis of the subject to the practical details of organising a course in the school context. We encourage them to place an emphasis on the field observational basis of the subject, linked closely to work in the laboratory or classroom.*

# No formal abstract available for this paper.

Bull. geol. Soc. Norfolk (for 1972) **21**, 11-15. (Published April 1972)

Page 1 of 1

Website design and funding by:

UK Fossils [www.ukfossils.co.uk](http://www.ukfossils.co.uk) and UKGE [www.ukge.co.uk](http://www.ukge.co.uk)

  
[www.norfolkgeology.co.uk](http://www.norfolkgeology.co.uk)

**THE STRATIGRAPHICAL POSITION OF THE NORWICH CRAG  
IN RELATION TO THE CROMER FOREST BED SERIES**

*R.G. West*

Sub-department of Quaternary Research, Botany School,  
University of Cambridge, Downing Street, Cambridge, CB2 3EA, UK.

**# SUMMARY**

*The stratigraphy of the Cromer Forest Bed Series had been clarified by the application of pollen-analytical methods to the coastal exposures from Weybourne to Corton.*

*Provisional stratigraphical results (West and Wilson, 1966).*

<b><i>Stage</i></b>	<b><i>Deposit</i></b>	<b><i>Environment</i></b>	<b><i>Formerly Identified by C. Reid as:</i></b>
<i>Lowestoftian</i>	<i>(i) Till.</i>	<i>Glacial.</i>	<i>Cromer Till.</i>
	<i>(h) Mossy silts, sands. Ice-wedge casts and involutions.</i>	<i>Cold freshwater. Permafrost.</i>	<i>Arctic.</i>
	<i>(g) Silts, sands.</i>	<i>Temperate estuarine marine.</i>	<b><i>Leda myalis Bed, Forest / Bed (Estuarine).</i></b>
<i>Cromerian</i>	<i>(f) Soil.</i>	<i>Temperate.</i>	
	<i>(e) Muds, peats.</i>	<i>Temperate freshwater.</i>	<i>Upper Freshwater Bed.</i>
	<i>(d) Silty marls. (c) Silts (d) Gravels, sands, clay conglomerates. Ice-wedge casts and involutions.</i>	<i>Late-glacial freshwater. Cold freshwater. Cold. Permafrost.</i>	<i>Arctic Freshwater Bed. Forest Bed (Estuarine).</i>
<i>Pastonian</i>	<i>(a) Silts and sands.</i>	<i>Temperate estuarine marine.</i>	<i>Weybourne Crag.</i>

# No formal abstract available for this paper.

Bull. geol. Soc. Norfolk (for 1972) **21**, 17-23. (Published April 1972)

Page 1 of 1

Website design and funding by:

UK Fossils [www.ukfossils.co.uk](http://www.ukfossils.co.uk) and UKGE [www.ukge.co.uk](http://www.ukge.co.uk)

 [www.norfolkgeology.co.uk](http://www.norfolkgeology.co.uk)

---

**A PRELIMINARY ACCOUNT OF A RESEARCH BOREHOLE  
AT SYLEHAM, SUFFOLK**

*A.R. Lord*

School of Environmental Sciences,  
University of East Anglia, Norwich, NR4 7TJ, UK.

**# INTRODUCTION**

*Initial accounts of previous research boreholes undertaken in an investigation of the Lower Pleistocene have already appeared in the Bulletins of this Society. The present note describes the findings of a fifth borehole, the last in the current series. Some results from the Stradbroke Borehole (UEA 3) will appear shortly in the Geological Magazine.*

*(Borehole UEA 5.) High Elm, Syleham, Suffolk (TM 2095 7833) - Located beside the East Anglian Water Company's pumping station.*

*Drilled in October, 1970. Surface level 138.48' (42.51 m) O.D. The borehole was made close to the pumping station where a number of boreholes had been drilled by the East Anglian Water Company for water supply purposes. The earlier boreholes provided valuable stratigraphic information and, particularly important, a number of samples which included a peat from 105~108' (32.0~32.9 m) below surface and sands containing excellent assemblages of foraminifera.*

# No formal abstract available for this paper.

Bull. geol. Soc. Norfolk (for 1972) **21**, 25-28. (Published April 1972)

Page 1 of 1

Website design and funding by:

UK Fossils [www.ukfossils.co.uk](http://www.ukfossils.co.uk) and UKGE [www.ukge.co.uk](http://www.ukge.co.uk)



[www.norfolkgeology.co.uk](http://www.norfolkgeology.co.uk)

---

**REPORT ON A FIELD MEETING TO THE NORFOLK COAST  
AT YARMOUTH AND OVERSTRAND**

*S.J. Craig-Smith and G. Cambers*

School of Environmental Sciences,  
University of East Anglia, Norwich, NR4 7TJ, UK.

**# SUMMARY**

*On Sunday 19<sup>th</sup> September 1971 a field meeting examined some of the erosion problems along the Norfolk coast. Assembling at Gorleston beach, where an outline of the erosional history was given:*

*Gorleston beach extends south from the harbour entrance (the outflow of the rivers Yare, Waveney and Bure) to Yarmouth borough boundary, approximately 1.7 km. Its width 80 m at its northern end to 50 m at its southern end, but this is less than half its width in the early 1960's. Backing the beach for is a concrete wall and behind that Gorleston cliffs, 20 m high, artificially sloped and turfed.*

*Prior to 1962 Gorleston beach showed little sign of erosion. Beach levels dropped after severe storms but, the beach was soon restored to its original volume. Since that date however, there has arisen a serious problem of erosion which shows no sign of abating. By 1965 erosion had become sufficiently serious for the Borough Engineer to consult the Hydraulics Research Station which conducted a survey the following year (Hydraulics Research Station 1966). In December 1969 14,000 m<sup>3</sup> of sand was injected onto the beach near the yachting pool (a remedial measure suggested by the Hydraulics Research Station) but this had only a temporary effect. In 1970 the Borough Engineer asked the School of Environmental Sciences at the University of East Anglia to carry out a three year research programme (Craig-Smith, 1971<sup>a,b,c</sup>) into all the environmental factors, Not only at Gorleston, but along the entire coast from Winterton, Norfolk to Benacre in Suffolk. As part of the analysis early maps of Gorleston beach were consulted.*

# No formal abstract available for this paper. (Summary account of field trip, 1971)

Bull. geol. Soc. Norfolk (for 1972) **21**, 29-40. (Published April 1972)

Page 1 of 1

Website design and funding by:

UK Fossils [www.ukfossils.co.uk](http://www.ukfossils.co.uk) and UKGE [www.ukge.co.uk](http://www.ukge.co.uk)

 [www.norfolkgeology.co.uk](http://www.norfolkgeology.co.uk)

**REPORT ON A FIELD MEETING TO THE NORFOLK COAST  
(JOINT MEETING WITH THE CONOCHOLOGICAL  
SOCIETY OF GREAT BRITAIN AND IRELAND)**

*P.G. Cambridge*

258 Bluebell Road,  
Norwich, NR4 7LW, UK.

**# SUMMARY**

*This meeting on 8<sup>th</sup> August 1971, was to examine and collect from a series of snads occurring in the tills of the Norfolk Coast.*

*The first of these was at California Gap (TG 518 417) where a series of sands occur between two tills or boulder clays. Near the base, these sands are often rich in shell fragments and members collected a good representative series. The sand beds are probably a northern extension of the Corton Sands. Many of the shells are well known from the earlier Crag series, such as **Scaphella lamberti** (Sowerby), **Turritella incrassate** (Sowerby), **Astarte omalii** Lajonk, etc., but with them are considerable numbers of **Macoma balthica** (Linne). The 'Cortonian' fauna has been the subject of much controversy over the years and three possible origins have been suggested:*

- 1) That the whole fauna lived in the area and that the 'warm water' forms, which had been wiped out by an ice advance, re-occupied the area from elsewhere.*
- 2) That the deposit was formed partly from the destruction of Crag beds of several ages during a temporary regression of the ice front and that all the shells are derived.*
- 3) That some forms were derived from earlier Crag and that these are mixed with an indigenous fauna.*

# No formal abstract available for this paper. (Summary account of field trip, 1971)

Bull. geol. Soc. Norfolk (for 1972) **21**, 41-43. (Published April 1972)

Page 1 of 1

Website design and funding by:

UK Fossils [www.ukfossils.co.uk](http://www.ukfossils.co.uk) and UKGE [www.ukge.co.uk](http://www.ukge.co.uk)

 [www.norfolkgeology.co.uk](http://www.norfolkgeology.co.uk)