FENLAND: ITS ANCIENT PAST AND UNCERTAIN FUTURE

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Fenland: its ancient past and uncertain future

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I

Introduction

The Fenland of East Anglia is the vast shallow basin, several hundred square miles in extent, stretching from Lincoln in the north to Cambridge in the south, and from Peterborough and Huntingdon in the west to Boston and King's Lynn close to the coast of the Wash. The whole structure and economy of the area has been determined by the superfluity of water brought into it on the one hand by inundations of sea-water, particularly during times of a rise of sea-level relative to the land, and on the other by fresh-water from an extremely large catchment area of surrounding upland that is concentrated within it by the flow of such considerable rivers as the Witham, Welland, Nene, Great Ouse, Little Ouse, Lark and Nar. Defoe in 1724 had summed up the situation perfectly: 'in a word, all the water of the middle part of England which does not run into the Thames or Trent comes down into these fens'. The Fen basin could fairly be said to be brimful of deposits laid down in water, silts and clays on the seaward side and black fresh-water peat behind them. It is this infilling which has induced that outstanding, and to some, entrancing quality of the Fenland landscape, an interminable flatness relieved only here and there by the gentle emergence of low islands of gravel where the fen floor pokes upward above the general water-level. To travel by train north from Ely is to be reminded of the vast Hungarian plain, likewise devoid of trees save small clumps planted round the isolated farms, and equally without hedges: both convey feelings of vastness and remoteness, although the dominant factor of the one landscape is drought and the other wetness, and a closer look shews the Fenlands to be carrying far more diverse crops and, in response to the prevalence of water, to be regularly and closely intersected by drainage dykes. In both the flatness provides that feature of a display of the vast hemisphere of sky impossible to match elsewhere in Britain and the key to the affection the landscape generates in the hearts of resident fenmen. As one, unexpectedly communicative, explained to me: 'any fool can appreciate mountain scenery but it takes a man of discernment to appreciate the Fens'. However the car, the tractor and the roads they require, together with accelerated drainage and wastage of the peat, are reducing both the scale and isolation of the

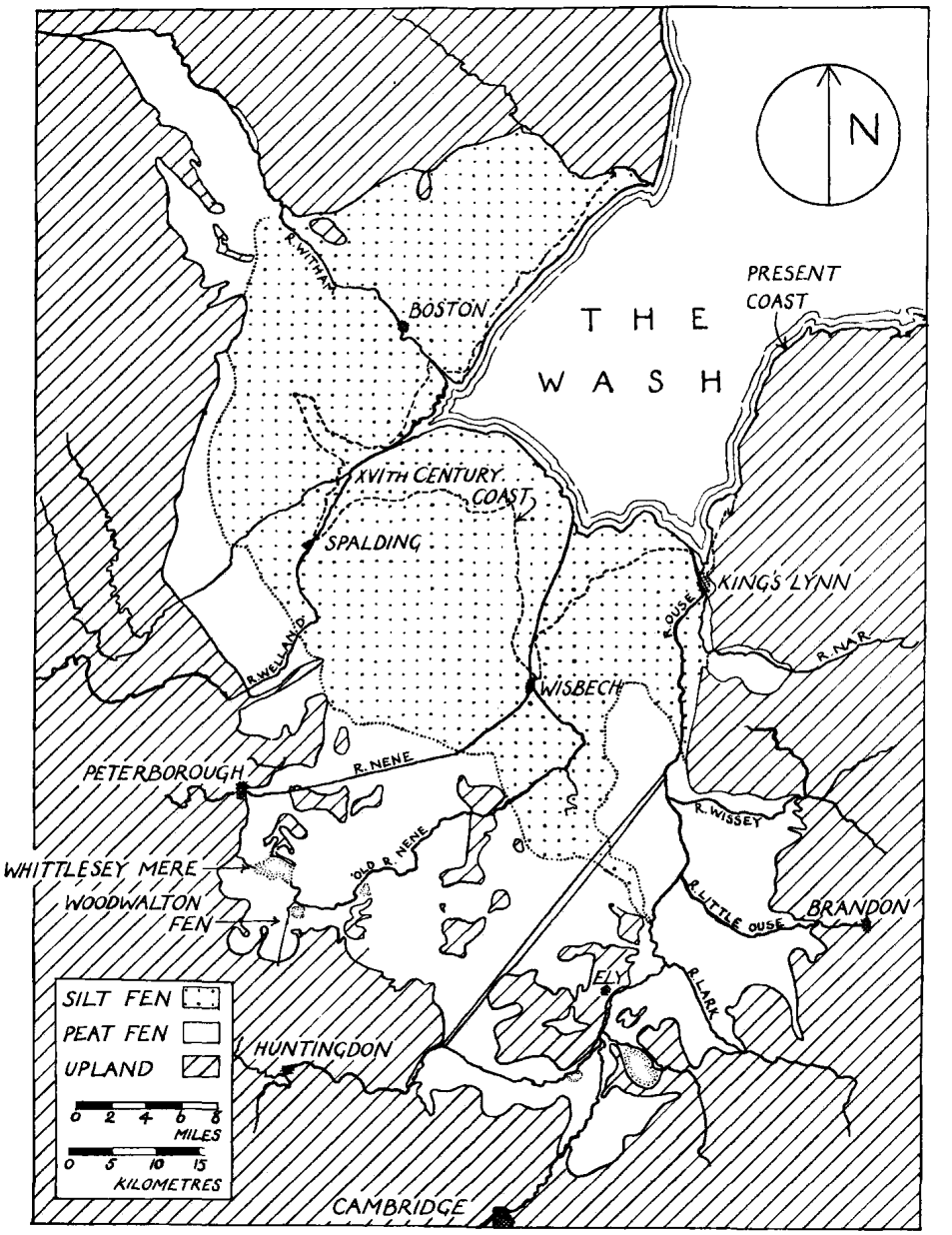

Fig. 1. Map of the Fenland basin showing in broadest outline the distribution of the main areas of peat and silt and the islands of basal clay and gravel. The former main estuary is indicated by the silt tapering south-eastwards from Wisbech across the line of the Bedford Levels towards Littleport.

Fens, so that it seems a far cry to the quite recent time when the fen waterways were a major means of transportation and when in winter it was easier to travel from Cambridge to Ely by boat than by road, and when for the whole winter the wife of a fenman working deep in the heart of the black fens would be regularly cut off with her children, by the impassibility of the peaty fen droves, from all contact with the villages and towns of the uplands – a state of affairs persisting into the 1920s. All the same, it is still possible to

Plate 1. View of Ely from Stuntney Old Hall across the neck of ploughed peat-fen in which was found the Late Bronze Age founder's hoard.

see the reassuring command of Ely cathedral visible on its island from miles across the Fenland and to realise that St Guthlac may indeed have built his refuge at Crowland in a 'hideous fen of a huge bigness' despite 'such apparitions of devils as were so frequently seen there'.

The powerful visual appeal of this singular landscape, with its capacity to arouse strong emotional responses in us, is paralleled by the appeal it makes to the scientist, the archaeologist and the historian through the wealth of opportunity it presents for exploration of fresh evidence in their respective fields. This became most strongly apparent about a century ago, especially through the publication of the very comprehensive volume *The Fenland, Past and Present* by S. H. Miller and S. B. J. Skertchly (1878). The second of these authors had published in the previous year his Memoir of the Geological Survey, *The Geology of the Fenland*, a work of remarkable virtuosity and foresight that, by venturing to go counter to fashionable geological tenets of the time, came so close to the true interpretation of the geology of the Fenland that in essentials it has never been successfully challenged. It has moreover the great virtue that it records objectively a great deal of evidence no longer accessible to us. Miller has been less fortunate in that the great reorganisation of our knowledge of British prehistoric archaeology was to come well after the turn of the century and we find overmuch attribution by him and his contemporaries to conjectural Roman activity, and that their documentary research of later periods was far less stringently based than is now acceptable. All the same Miller provides,

Plate 2. Typical view of ploughed peat-fen at Ramsey Hollow near Woodwalton. In the foreground fruiting heads of the giant reed, *Phragmites communis*: the level plough land is broken only by the lines of drainage ditches and the trees indicate local elevations.

in the joint volume, valuable accounts of the contemporary fauna and flora, of industries such as peat-winning, of the operation of wild fowl decoys and of the past prevalence of particular diseases such as malaria and phthisis.

After the appearance of these great pioneer works no general reappraisal of the history of the Fenland was made for a very long time although scientific technology was increasingly applied to the building of railways, to drainage and water-transport and to the means of cultivation. Continuing discoveries made during these operations were separately recorded, but it was not until the present century was well into its stride that acceptance of a new scientific principle provided the mechanism allowing re-assessment and unification of the whole historical position. This came with the development of the subject of ecology and its growing acceptance from the 1920s onwards, and more especially the recognition of the validity of the ecological approach to all problems of the environment, that now in the 1970s we all take for granted. In understanding how the Fenlands came into being and what their natural condition was like, the ecologist now had advantages over the classical geologists who had hitherto been the outstanding interpreters of the Fens. Although the geologist of that period had based his science upon the principle that the past history of the earth is to be explained in terms of natural processes still at work, he was naturally experienced almost wholly with geological events and periods operating over very long periods of time, often tens of thousands of years and with considerable spatial dimensions, tens or hundreds of feet (or metres) in

thickness of beds or in elevation or depression. Phenomena of a few seasons only, the local shift of a river channel, a single tidal cycle or the lifetime of one organism, concerned him only in a general way and dimensions of a few inches (centimetres) rise or fall in water-level or mud-accumulation concerned him only incidentally. On the other hand the field-ecologist finds such 'minor' changes and dimensions crucial to the lives of the organisms with which he deals and vital to the control of both plant and animal communities, so that he has perforce to become an investigator of geological events on a small and very local scale. With the rise of ecology, his experience came to fill a gap in the scale of geological expertise, an expertise to which otherwise he was nevertheless constantly in debt.

The relevance of these considerations lies of course in the comparatively minor and recent character of the geological events that brought the Fenlands into being and determined their nature: in fact we now appreciate that the bulk of Fenland deposits have been laid down within so short a time as the last six thousand years, and many of them reflect processes and changes of familiar ecological patterns. If it is to be successful this book must show how effective the marriage of the ecological and geological disciplines has been in making out the story of the Fens.

It is impossible to comprehend this story without the realisation that the Fenland deposits of the last six thousand years owe their origin primarily to a major rise in ocean level, and that their variations are largely due to subsequent lesser movements of relative height of land and sea. We may summarise the consequences of this over-riding control in the following way.

During periods of marine invasion the tidal water caused backing-up of the river water behind it so producing waterlogging over the whole hinterland, and there the landscape was one of continuous fen vegetation whose remains stay largely undecayed to form peat. This is the key to the present separation of the Fenland into the wide seaward belt of silt formed in estuarine conditions, and the black peat fens between it and the Fen margin. It supplies also the key to understanding the stratigraphy of the Fen deposits and so unravelling the geological history of the Fens: in periods of marine transgression the silts and clays will have overlaid previously deposited peats, and during emergences freshwater peat will have extended seaward over the silts and clays. Some oscillation in former relative land and sea level has therefore produced an alternate wedging-out of silts and clays on the one hand and of peats on the other (Fig. 2). Near the Fenland margin, beyond reach of even the furthest marine incursion, there is uninterrupted peat to a depth even now in places of 12 or 14 ft (3 or 4 m), further seaward the peat is split into two by an increasing thickness of the estuarine 'buttery clay', and still nearer the Wash the silts and clays are only broken by thin

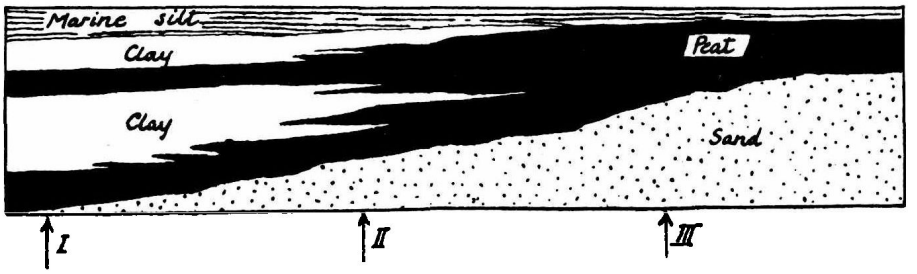

Fig. 2. Diagram to show deposits of the north-west German coast revealed by borings at the three sites indicated. The alternation of marine clays and silts with fresh-water peat is quite similar to that in the Fenland basin on the opposite shore of the North Sea.

layers of peat. We shall see how knowledge of this can be systematised and correlated with biological changes and phases of human occupation over the last seven or eight thousand years.

It was by a fortunate series of developments that I became so deeply involved in the decipherment of the Fenland story. A very early and continuing involvement with ecological teaching and research was, in my case, conveniently developed in the residual Fenland of East Anglia and especially at Wicken Fen, so that a series of observations and publications on fen ecology by myself or by students whom I directed has continued through from 1923 until 1974, and these have also extended to some other parts of Britain. The following chapter indicates how basic these continuing studies of natural plant communities and their component plants have proved to be in the investigation of Fenland history. The second major influence concerned my later, but equally deep and persistent interest in the technique of 'pollen analysis', rightly regarded as 'palaeoecology'. As is described in Chapter 3, this powerful research tool was introduced into the Godwin ménage by my wife in the early 1930s. It was initially applied to samples taken from deep peat deposits such as were naturally available in the Fens, and as it became evident that its findings were going to be closely bound up with knowledge of fen and bog vegetation it was progressively harder to resist the opportunity to involve myself with it, particularly because the fieldwork of excavation and boring required for stratigraphic information sampling was often very demanding physically. Before long in fact 'H. and M. E. Godwin' constituted an active pollen-analytic team, responsible for several early publications, and the basis of a great deal of subsequent scientific activity centred on the Cambridge Botany School. One should add a concern with, and affection for geology active already when, unusually, it formed one of my entrance scholarship subjects as long ago as 1918; it was a trend happily fostered by a series of very distinguished senior geologists who also regarded recent Fenland deposits as meriting fuller attention than they had hitherto had.

It is not hard, in retrospect, to see how this combination of scientific interests led naturally, almost inevitably, to the sequence of Fenland investigations that are covered in Chapters 2 to 4, all of them based on

drawing jointly upon plant ecology, pollen analysis and stratigraphy. Meanwhile a remarkable revitalisation was becoming manifest in British archaeology where professionals and amateurs were becoming acutely aware of the great advantages that could follow integration with the natural sciences. We were now in the fortunate position of participation in the enthusiastic group of specialists that constituted the Fenland Research Committee, whose origin in 1932, and whose nature, are described in Chapter 5. In the few short years of its existence it took advantage of fortuitous discoveries and made opportunities for research projects in the Fenlands that were startlingly successful examples of scientific team work in the field and laboratory. We brought the combined resources of archaeological scholarship, and of the biological, geographical and geological sciences jointly to bear, and with enthusiasm addressed ourselves to unravelling the complex story of the Fenland. To a considerable extent the body of this book is a narrative of the progress thus made, and continued more sporadically by some of us after dissolution of the Committee itself. If the account has a 'who dun it?' quality this is entirely proper: that is the quality of all active scientific research, which inevitably looks for causes and mechanisms, and it certainly marked all the meetings, field investigations and publications of the committee.

The history of our quest to establish a solid factual basis for our ideas on the structure, evolution and cultures of the Fenland basin occupies the whole of Chapters 5 to 11. Despite the importance and coherence of this theme it represents only one phase in the history of modern Fenland research. In the years since those when the Fenland Research Committee were active a good deal of further progress has been made. It has become plain that we much underestimated the diversity of bog- and peat-types that were formerly present in the Fens. This factor, however, is one on which ancient history, past economy, modern usages and the natural occurrences of plant and animal life all depend so that it is important to record what evidence we have for it. Likewise knowledge of the nature of peat shrinkage and loss have been greatly extended by observations during their continued operation: their consequences for the whole Fenland scene and livelihood are so severe that they cannot be disregarded. I have accordingly included accounts of three main categories of changes thus induced. Firstly an outline of the principles of development of the man-made drainage system, both as causing peat loss and as reacting to it. Secondly, an account of a few highly characteristic Fenland crops, now vanished or rare, and thirdly a brief consideration of the extensive losses and threats of losses that these vast and rapid changes have brought about in the natural fauna and flora of the region.

It has been incidental that the continuing series of Fenland investigations

through fifty years or so has taken one into tracts of Fen country often extremely remote and unfamiliar to outsiders. Our visits were of necessity made in all kinds of weather depending upon the chance of some discovery or other, a temporary section or the needs of a fixed programme of observations. To work in the wet clays and soft peats 20 ft below sea-level in some sluice excavation in misty rain, gives one what can only be called an 'intimate' familiarity with fen conditions. Likewise if one undertakes hourly records of water-level from dawn to dusk through hot summer days in lush vegetation and still air infested with hungry mosquitos. Particular enquiries take one to unfamiliar droves and drainage channels, and one learns to appreciate the special qualities and skills of the fen folk. Above all one generates an appreciation of and affection for the vast hemispherical skyscapes, and one develops a great deal of interest in the evidences of ways of life, customs, architecture and crops that have recently vanished or are in swift process of disappearing. Quite a large proportion of this evidence particularly catches the eye of the botanist and ecologist, as for instance the nature and extent of peat digging, the former cultivation of the opium poppy, cole, hemp and woad, and the later part of the book concerns such matters, seeking not only to record the observations whilst they are still to be recollected, but also to set them down against a more general experience of one's own outside the Fenland. Lastly, in face of the extreme rapidity with which the Fens are now altering, I have thought it useful to discuss some of the problems of management of those areas wisely set aside as nature reserves: long service on conservation committees has taught me how complex and involved the preservation of such areas can be; I believe, however, that it can only be achieved by evaluation of the controlling ecological conditions, and a management that conforms to, rather than opposes them.

There are many things this book is *not*. It deals scantily with the northern Fenland and not at all with its coast. It does not describe the detailed history of the drainage of the Fens (although it is necessarily concerned with the consequences), it gives no account of modern agricultural usage of the Fenland, important as this certainly is, nor does it describe the civic quality of the towns and villages of the fen margins and islands. Good authoritative accounts exist on these topics. This remains a story primarily of my own affectionate involvement in the continuing adventure of seeking to understand the course and the processes that have shaped Fenland history and prehistory, sometimes possibly importing hard scientific fact into explanations of fen phenomena that have varied from over-imaginative to fantastical.

2

Ecological background

The progress of scientific knowledge is by no means steady and continuous, except possibly when regarded upon average over a very big field: within individual subjects and areas of enquiry there are long periods of quiescence ended only by the arrival of newer and sharper scientific tools. These tools embrace not merely new techniques and apparatus, but of even more significance, new theories and concepts that may totally alter established lines of thought. This has been conspicuously so with the subject of ecology, which is perhaps more a way of regarding all environmental circumstances and events than a separately defined scientific subject. In these days when powerful lobbies of environmentalists are forces to be reckoned with by businesses and governments and the need for conservation of natural resources is widely accepted, it is extremely hard to believe that even ten years ago 'ecology' was a word hardly understood by the British public, whilst less than fifty years since, biological scientists themselves poured scorn on those few of their colleagues misguided enough to interest themselves in ecology.

It was my own good fortune firstly to have become aware of ecology at school and secondly to have encountered as undergraduate in Cambridge, the great pioneer plant ecologist, A. G. (later Sir Arthur) Tansley. It was in his company, therefore, along with a handful of members of the newly-created 'Botany School Ecology Club', that we made the initial field trip, that took us in 1921 via Upware to Wicken Fen, so beginning a long history of involvement with the subject of ecology as a whole and in particular with the ecology of fen and bog vegetation. This visit was soon followed by field-class excursions from the botanical department by bicycle to the 'Slap-up' at Waterbeach and thence to the river at Baitsbite, from which point we followed the fen road under the river-bank stopping repeatedly to identify unfamiliar plants in the ditches, which at that time were often carpeted with a crimson floating mat of the tiny water-fern, *Azolla filiculoides*, or with the small shining green leaves of the frog-bit. Reaching Upware the ferryman had to be brought over from the 'Lord Nelson', much better remembered as the 'Five Miles from Anywhere'.

Plate 3. The Main Lode, Wicken in summer, 1957. In the deeper water the white water-lily (*Nymphaea alba*), more marginally (foreground) yellow water-lily (*Nuphar luteum*). Much of the fringing swamp is bur-reed (*Sparganium simplex*).

Thence we bicycled by way of Spinney Bank, and Breed Fen Drove and Lode Lane to the entrance to Wicken Sedge Fen and St Edmund's Fen at the head of Wicken Lode. Under the guidance of such able plant taxonomists as Humphrey Gilbert-Carter, Director of the University Botanic Garden, we learned to identify the remarkable wealth of fen plants still growing there. At that time the only substantial ecology carried out at Wicken had been that by R. H. Yapp before the 1914–18 war: he had now moved away and it fell to the post-war generation of ecologists to recommence work on the Fen communities of plants and animals.

What made the study of fen vegetation of such potential significance for the understanding of Fenland history was the fact that plant ecologists had recently established and were applying a very important concept of the behaviour of plant communities. This was the idea of vegetational succession, which recognised that all plant associations, however stable-seeming, were in process of progressive and orderly change. Some of these changes were caused by outside agencies, such as shifts of climate, deposition of fresh soil, different grazing or altered drainage. Apart, however, from these the theory had it that, even in the absence of outside changes, the communities would themselves so alter their own habitats that progressive changes *had* to follow. In terms of wet habitats this meant that one recognised that the colonisation of open water by floating plants and dependent animals leads, however slowly, to the accumulation of organic mud from plant and animal remains which are undecayed in the unaerated bottom layers. This, the 'reaction' of the community itself, causes

shallowing of the water, allowing in time the rooted but submerged flowering plants to establish themselves and slightly to hasten the reaction. In time, therefore, we find the reed-swamp community of true bulrush (*Scirpus lacustris*), its leaves below water and flowering stem high above, with the reed-mace or cat-tail (*Typha latifolia* and *T. angustifolia*) and giant reed, *Phragmites communis*. By now it is not only fallen fragments sinking to the lake bottom that are involved but the strong, deeply penetrating stems and fibrous roots of the reed-swamps that are thickening and firming the growing mat of vegetable material. From this time on it is mainly below the surface that the accretion occurs and its pace increases. The material previously formed in open water is best regarded as organic mud, but that which now accumulates is peat, with its fibrous structure and more or less evident derivation from plants growing very close below water-level or just above it. The continuing peat-growth soon allows colonisation by a host of rushes, moisture-requiring herbs and sedges, of which the most robust is the giant sword-sedge (*Cladium mariscus*). Against their competition the last reed-swamp species disappear: the true aquatics have already vanished. As the peat-forming reaction persists and the peaty ground surface emerges, seasonally at first, from the water, the first moisture-tolerant bushes, especially the sallows, establish themselves, to be followed soon by the most moisture-tolerant trees, the alder and hairy birch, which by their greater height can exclude light from lower vegetation, so eliminating the

Plate *4*. Deep-water reed-swamp of *Scirpus lacustris*, the true bulrush: its tall cylindrical flowering haulms project above water, but below water it has narrow ribbon-like green leaves. The white water-lily, its common associate, also is bottom rooted and has submerged leaves.

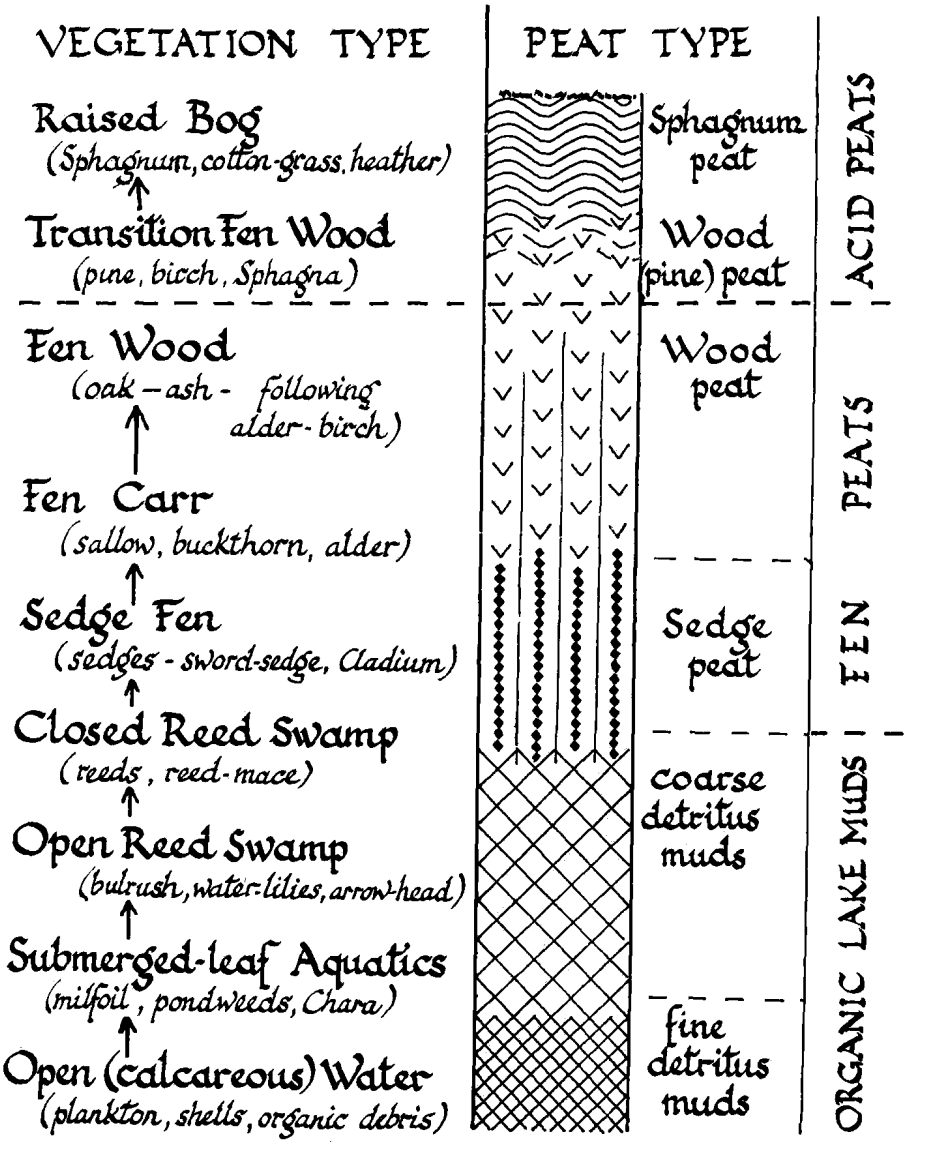

Fig. 3. Diagram showing (left) the natural succession of vegetation from open water without outside influence, by the gradual accumulation of the plant remains that it generates: the stratigraphic symbols are those generally used for these organic materials. Note the major change that occurs in suitable climates, when the peats become acidic as they grow above water level: the whole sequence is represented in the Fenland.

sedge-dominated vegetation and replacing it by a wet fen woodland. Even now, the woody roots further consolidate the ground and slowly raise its level so that taller trees like the ash and oak invade and take over dominance. We supposed at that time, that the vegetational succession had reached, with the fen oak wood, a 'climax' stage of stability beyond which, in the conditions of the British climate, it did not naturally progress. We were to find, as Fenland studies of existing and former vegetation continued, that