CHAPTER SIX

The Great British Vowel Shift.

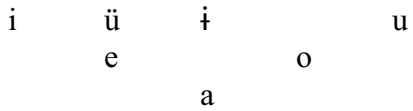
1.1 THE BASIC ISSUE. Most linguists are familiar with the so-called `Great Vowel Shift' that affected the long vowels of Early Modern English (e.g. Bynon, 1983, 82) and has been subjected to a classic structuralist analysis by André Martinet (1955, 248-56). The present chapter is concerned with a less well known but considerably older set of shifts in the vowel system of British Celtic.

1.2 The vowel phonemes ascribed to Insular Celtic in III.5.7 provide the obvious starting point. It is of no immediate concern here whether *eu* became *ou* as early as Proto-Celtic, as argued in chapter two, or later in the separate prehistories of all attested Celtic languages. Although *ou* (including < *eu*) was monophthongised to *ō* in the prehistory of both Irish and British, its retention as a diphthong in the first instance in Gaulish and Celtiberian (I.2.4 and 3.6) proves that this was not a general Celtic and, therefore, not a Proto-Celtic phe-nomenon. It may not even have been a feature of Insular Celtic prior to the separation of these two branches if occasional spellings such as Tacitus' *Bou-dica* or LOVCETIO and TOVTATI on British Latin inscriptions (*LHEB* 306-7) are taken at face value. Certainly *ou* > *ō* is so well motivated as a means of restoring balance to the system in II.5.4 that it could easily have occurred in Irish and British independently. Be that as it may, early spellings such as *Londinium* in Tacitus and NODONTI or NODENTI on British inscriptions, not to mention the frequent merger of internal Latin long *ō* with this sound in loanwords, strongly support Jackson's (*LHEB* 312-4) contention that mono-phthongisation had taken place in British by the end of the first century A.D. at latest. The result was the (Insular Celtic or) Proto-British reversion below to the configuration of five short and five corresponding long vowel phonemes that had been characteristic of early Proto-Celtic prior to the various changes discussed in chapter two.

i				u		ī			ū
	e		o				ē	ō	
		a					ā		

1.3 This Proto-British system combining five basic vowel qualities with the distinctive feature ±*length* stands in marked contrast to the system inferred below for Old Welsh from about the ninth century onwards. Since this consists of seven basic vowel phonemes with distinct articulations and merely allophonic

variations in length, the obvious question is how and why this radical restruc-turing came about.



This is an evident case of what Martinet termed `isochrony' and defined and explained as follows. `Isochrony is the condition that arises from the elimi-nation of the phonemic feature of vowel length. The types of process involved may vary considerable from language to language but the end result is always a situation in which the length of every vowel in a sequence basically depends upon phonematic or prosodic environment and one may surmise that isochrony is regularly arrived at through the lengthening of certain originally short vowels that had become too short for their environment and through the shortening of other originally long vowels that had become too long for the checked or unaccented syllables in which they occur' (1955, 248). That being so, the transition from the Proto-British to the Old Welsh system seems a promising candidate for investigation along lines similar to those pioneered by Martinet with reference to the English shift. The above diagrams as well as those in the remainder of this chapter attempt to present various stages in the evolution of the system of vowel phonemes by using vertical position to denote high (top) versus low (bottom) plus slanting axes for front unrounded (*i*, *e* etc.) and back rounded (*u*, *o* etc.) vowels intersecting at back unrounded *a*. The intervening space is reserved for front rounded vowels (e.g. *ü*) to the left, central rounded vowels (e.g. ʉ) to the right and central unrounded vowels (e.g. ɨ) in the middle.

1.4 In his seminal book *Language and History in Early Britain* published in 1953 Kenneth Jackson has erected an imposing chronological framework for the many sound changes to affect British Celtic during the first twelve centuries of the Christian era. This combines logically deduced relative linguistic chronologies with broad absolute dates assigned to certain developments. These in turn depended upon the scanty inscriptional and vernacular record plus the various external correlations implied by Latin loanwords in British, British loanwords in Irish and Anglo-Saxon placenames of British origin. Thorough though Jackson's treatment was in virtually every other department, it could be and indeed has been (Watkins, 1954) criticised for paying insufficient attention to structural considerations. In an important recent reappraisal Patrick Sims-Williams (1990) has profitably incorporated this dimension into parts of an overall argument that some of Jackson's absolute dates could be pushed back by up to a century without doing violence to the available evidence. Within the parameters set by that evidence the following discussion of the transformation

of the Proto- into the Late British vowel system will attempt to go a stage further and place structural considerations in the foreground throughout.

2.1 BREAKDOWN OF THE INSULAR CELTIC SYSTEM. Although there may be room for manoeuvre on absolute dating, the principal uncon-ditioned sound changes to affect the above Proto-British system of five long vowel phonemes prior to the loss of phonemic length are non-controversial. The first batch to concern us are:

(a) The close or mid high back rounded vowel *ō* had been raised to *ū* by the fourth century A.D., to judge from spellings like Ammianus Marcellinus' *Lundinium* and inscriptional NUDENTE vs. Tacitus' *Londinium* and NODONTI or NODENTI. Jackson (*LHEB* 305-15) suggests the end of the third century as a reasonable date for this development, which underlies MW *tut* (Mod. *tud*) `people' < **tüd* < **tūtā* < **tōtā* < **toutā*). However, the demonstrable conservatism of Romano-British orthography led Sims-Williams to formulate the sound principle that `as a general rule, a recording of a phonological innovation in an inscription is significant chronologically, but a *non*-recording is insig-nificant. Hence epigraphy can rarely stand in the way of *ante*-dating sound changes' (1990, 237). In similar vein Arwyn Watkins has pointed out that `the early appearance of a changed form is of far greater importance than a great many more, but later, examples of unchanged forms' (1966, 1). That being so, an earlier date for this change in the third or even the second century can hardly be excluded.

(b) In non-final syllables the Proto-British and Proto-Celtic diphthong *oi* fell together (except in auslaut, where it had already become *-ī* in Insular Celtic; III.5.7) with *ū* from *ō* and then shared its development, as can be seen from a comparison of Middle Welsh *un* /ün/ `one' < **oinos* (cf. OLat. *oinos* > Lat. *ūnus*) with *tud* `people' < **tōtā* in (a). There is no good direct evidence for dating. The usual treatment of Latin *ū* like the product of Proto-Celtic *ō* and *oi* in loanwords such as MW (also C and B) *pur* /pür/ `pure' < Lat. *pūrus* would be surprising if British had no *ū* during the second and third centuries when most such loans can be assumed to have taken place. Jackson resolves this problem by placing *oi* > *ū* shortly after late first-century *ū* > *ü* in 1(c) and some time before late third-century *ō* > *ū* in 1(a), concluding: `thus we have a situation in the second to third century of a native *ō* < *au, ou, eu*, and a Latin internal *ō* which fell together with it; and a native *ū* < *oi*, and a Latin *ū* which was identified with it' (*LHEB* 314).

This may be so, but the difficulty would not exist in the first place if, as seems quite feasible, *ō* > *ū* were dated to the second century. This would make *ū* the only long rounded back vowel in British at the time. Assimilation of virtually identical Latin *ū* to this in loanwords like *pur* would be only natural,

and close or mid high Vulgar Latin *ō* would simply have had nowhere else to go, whence a case like Welsh *yscub* `broom' from **sküb* from **skūpā* for Latin *scōpa*. That being so, there is no firm criterion for ordering British *oi* > *ū* and *ō* > *ū* relative to each other and a more or less simultaneous development cannot be ruled out.

(c) Proto-Celtic and Proto-British high back rounded *ū* was fronted to *ü*, as in MW *ki* `hound' < *\*kü* < *\*kū*. This process must already have been under way by the time *ō* and *oi* had become *ū* on account of distinct reflexes in Old, Middle and present-day North Welsh. Apart from a couple of presumably very early loans like MW *kip*, ModW *cib* `vessel, cup' < **küpā* < **kūpā* for Lat. *cupa*, Latin *ū* was not assimilated to this sound but to the *ū* from *ō* and *oi* in (a)/(b), as in the case of *pur*. It thus looks very much as if old *ū* had become *ü* by the time a significant number of Latin loanwords began to enter British from the second century onwards. Hence Jackson's (*LHEB* 317-9) suggestion of a late first-century or, if the *cib* type represents an older stratum, an early second-century date.

2.2 Since this absolute date for *ū* to *ü* seems reasonably secure, the shift from *ō* or *oi* to *ū* would have to be dated earlier still if a push chain were posited. In that case the lack of any likely examples of *u* for *o* in Roman or Romano-British sources before the fourth century would be rather surprising. This consideration tips the balance of probability in favour of a drag chain with *ū* > *ü* by the early second century and *ō* or *oi* > *ū* not long after (see Bynon, 1983, 81-6 on similar developments in French and Attic Greek as well as on push and drag chains in general). Stages I-III below represent this process and its effects.

Stage I

ī ū
ē ō
ā

Stage II

ī ü
ē ō
ā

Stage III

ī ü ū
ē
ā

Although the fronting of *ū* > *ü* did not affect the basic inventory of long vowel phonemes, it did have one major structural effect upon the system. At stage I the contrast between mid high /ē/ and /ō/, high /ī/ and /ū/ can be stated

in terms of front/back as well as unrounded/rounded. However, once high back /ū/ had become high front /ü/, only *unrounded/rounded* remained as a distinc-tive feature capable of covering both pairs of oppositions. This in turn left /ō/ free to be raised to /ū/ without significantly altering a skewed system in which an unrounded front /ē/, /ī/ primarily distinguished by height came to be opposed to high rounded /ū/, /ü/[ü] primarily distinguished by position.

2.3 That brings us to the next sequence.

(a) An open or mid low vowel phoneme /ɛ̄/ arose by monophthong-isation of Proto-British and Proto-Celtic *ai*. This monophthong is reflected in Anglo-Saxon placenames and appears as *e* on Romano-British inscriptions but became an *o*-diphthong in all the British languages in contradistinction to the *u*-diphthong that resulted from the mid high long *ē* inherited from Proto-Celtic. Thus OW *coit*, MW *coet*, *koed* `wood', Rom.-Brit. *-cetum* < PC **kaitos* (Gaul. *Καιτο-*, *Ceto-*) or MW *hoed(y)l* `life', Rom.-Brit. *Setlo-* < PC **saitlo/ ā-* (cf. Lat. *saeculum*). Jackson (*LHEB* 324-9) argues from the lack of certain cases of *ai* in British that this had become ɛ̄ by the end of the first century A.D., if not before, but the meagre inscriptional evidence leaves the possibility of a date a century or two later open.

Since Proto-Celtic *ei* > *ē* had reduced the short *i*-diphthongs to *oi* and *ai* at an early stage, it is structurally tempting to posit their more or less simul-taneous eradication by monophthongisation to *ū* and ɛ̄ by 2.1(b) and 2.3(a) respectively. If so, stage III above soon gave way to:

Stage IV

ī ü ū

ē

ɛ̄

ā

It would thus seem that by about the end of the second century a new mid low front vowel had generated imbalance in the system by introducing a fourth unrounded phoneme that had no counterpart among the three rounded vowels. There was an obvious means of restoring equilibrium, namely:

(b) The rounding of low back *ā* to open or mid-low back ɔ̄. This re-mained a mostly rounded monophthong in Cornish and Breton but the usual Old Welsh reflexes were a diphthong *au* in final, that is to say stressed, syllables versus short *o* in non-final, i.e. pretonic, syllables, as the following examples show: OB *mor*, MC *mur*, OW *maur*, MW *mawr* `great' < **mɔ̄r* < PC **māros*; OW *trintaut*, MW *trindawt* < **trīnidɔ̄d* for Lat. *trīnitāt-*; OB *brotr*, MW *brawt, brawd* `brother' < **brɔ̄dr* < PC **brātīr*, MW *broder*, *brodyr* `brothers' <

**brɔ̄der* < PC **brāter-es*. Stage V below was brought into being by the change *ā* > ɔ̄.

Stage V

ī ü ū

ē

ɛ̄ ɔ̄

2.4 Jackson (*LHEB* 287-92) dates British *ā* > ɔ̄ as late as circa 500 A.D. If this were so, the shift in question could hardly be ascribed to pressures in the system established some three centuries earlier at stage IV. Since relevant Old English placenames regularly reflect this rounding (*LHEB* 292), it can hardly be dated much later than the early sixth century. Indeed, a significantly earlier date is indicated by sporadic instances of *o* for *a* in Roman or Romano-British sources from about the third century A.D. onwards (*LHEB* 290-1), given that a single innovatory spelling has greater evidential value regarding actual pronunciation than numerous traditional ones. Moreover, in a few cases, notably Middle Welsh *nawn* `afternoon' and *awr* `time' < **nɔ̄n*, **ɔ̄r* < Lat. *nōna*, *hōra*, Latin *ō* was assimilated to British ɔ̄ < *ā* rather than to *ū* in the usual way. On Jackson's dating of the rise of ɔ̄ this could not have happened before the sixth century, well after the end of Roman occupation. As he himself candidly admits (*LHEB* 307-8), this is uncomfortably late for such basic borrowings. A fourth-century date would suit much better and would be quite viable if the rounding of *ā* in British and, presumably, also in British Latin were dated circa 300 A.D. in line with the inscriptional data.

Jackson, however, felt obliged to discount this weighty evidence and opt for a much later date because `the first group of British loanwords in Irish, borrowed in the middle of the fifth century, show that the British sound was still *ā*, whereas the second group, borrowed during the sixth century, show that it had by then become ɔ̄' (*LHEB* 291). The basic issue here is the different reflex of British Latin *ā* seen in Old Irish *cáise* `cheese' from *cāseus* or *srát* `road' < *strāta* on the one hand and that in Old Irish *póc* `kiss' from an oblique case of *pāx* as in *osculum pācis* or *óróit* `prayer' from *ōrātio* (/orɔ̄d-/ with short *o*- for some reason) on the other.

2.5 Following in the footsteps of Sarauw and above all MacNeill, Jackson distinguished two main groups of Latin loanwords in Irish, namely a smaller `Cothriche' group that `was a direct consequence of the mission of St. Patrick, and is therefore to be dated in the middle of the fifth century' and a larger `Pádraig' group `introduced in the sixth century, a result of the very close relations between the monasteries of Ireland and Britain during that century' (*LHEB* 133). Among other things, the two sets are characterised by the

following differences in their treatment of British Latin (`Cothriche' first, `Pádraig' second): (i) *á* vs. *ó* for *ā*/ɔ̄, (ii) partial retention vs. total loss of terminations of the *-ius*, *-io* type, (iii) (*k*^{w} >) *c* vs. *p* for *p*, (iv) *ch*, *th* by Irish vs. *c* [g], *t* [d](, *p* [b]) by British lenition of postvocalic *c*, *t*(, *p*), (v) shortening vs. non-shortening of unstressed alias non-initial vowels, (vi) syncope vs. non-syncope of post-tonic vowels. As earlier and later borrowings of Lat. *Patricius*, OIr. residual *Cothriche* vs. standard *Pátraic* contrast diagnostics (ii)-(iv), while a similar relationship between *ortha* and *oróit*, both `prayer' < Lat. *orātio*, can be established on the strength of (ii) plus (iv)-(vi). Likewise *cáise* is `Cothriche' under the terms of (i)-(ii) and *póc* `Pádraig' in accordance with the criteria in (i) and (iii).

There are, however, a disturbing number of `hybrid' loanwords combining features from both groups, e.g. OIr. *pairche* `monastic federation' < Lat. *parūchia* (*paroecia*) with `Cothriche' (ii) plus (iv)-(vi) but `Pádraig' (iii). OIr. *srát* < Lat. *strāta* above is, of course, a further case in point, as it has `Cothriche' *á* under (i) but `Pádraig' *t* [d] under (iv). Jackson is naturally aware of this phenomenon but seeks to minimise its impact upon the clear chronological divide posited between the allegedly mid-fifth-century `Cothriche' and the sixth-century `Pádraig' group by rather vaguely suggesting that `this may sometimes be explained by the influence of analogy or by suffix substitution' and `changes in loanwords... may have taken place at different rates in different parts of the country' (*LHEB* 134-5). As for the combination seen in *srát*, `the reason may be quite simply because the various changes within the two groups need by no means have synchronised exactly: lenition in British is older than *ā* > ɔ̄' (*LHEB* 130), the corollary presumably being that *srát* was borrowed between `the second half of the fifth century' and `the later fifth to early sixth century' but *póc* etc. after the latter date by Jackson's reckoning (see *LHEB* 695). No answer is given to the obvious further question begged by a strict application of the two-group theory, namely whether this makes *srát* a late `Cothriche' or an early `Pádraig' borrowing.

The Gordian knot of problems raised by `mixed' forms of this type has now been cut by Damian McManus' (1983) cogent argument that these are too numerous and diverse for the hypothesis of two discrete groups to be sustained. Instead of arbitrarily assigning most of the shifts in question to a gap between two major influxes of loanwords, McManus posits the more or less continuous admittance of borrowings from British Latin into Irish in the wake of Christianisation in the fifth and sixth centuries. During this period of major phonological upheaval in both Irish and British a succession of changes in the former especially conditioned shifts such as those in (i)-(vi) above one by one at different times. This scenario, which has received the accolade of rejection by Karl Horst Schmidt (1988, 6-7; 1990, 128-31), is the only one with the

flexibility necessary to account for the facts, generating as it does (to use black-and-white `Cothriche'/`Pádraig' terminology) both `pure' and `hybrid' forms with equal ease by placing any given loanword at the appropriate point in a polychrome spectrum. For example, if the shift in (iii) preceded those in (iv) and (ii) as McManus suggests, OIr. *pairche* < *parūchia*, *peccath* (> *-ad*) `sin'< *peccātum* and *pridchid* `preaches' < *praedicat* will simply have been borrowed after the first shift but before the other two and thus cease to be an embarrassment in relation to `consistent' *Cothriche* etc. borrowed before and *Pátraic* etc. borrowed after all three.

2.6 As McManus (1984) has shown, the final vowel of OIr. *cáise* `cheese', MIr. *ortha* `prayer' reflects the assimilation of Lat. *cāseus*, *orātio* etc. to the closest native inflectional patterns as **kāseyah*, **oraθ-iyu* prior to the Primitive Irish loss of final syllables around 500 A.D., whereas its absence in later loans like *oróit* `prayer' is due to an analogous assimilation to the different native patterns predominating after the loss of final syllables. Since the former type also includes cases like OIr. *notaire* `scribe' < *notārius* with *t* = British [d] rather than Irish *th* under (iv) above, OIr. *srát* `road' could have been borrowed as an *ā*-stem before or after loss of final syllables. In other words, there is no firm criterion for dating its adoption or that of the OIr. *ā*-stem *plág* `plague' < Lat. *plāga* later than that of *cáise* once the `Cothriche'/`Pádraig' straitjacket has been removed. On the other hand, forms with *ó* rather than *á* like *oróit* < *orātio* or *trindóit* < *trīnitāt-* should be later than the post-apocope rise of new long vowels by compensatory lengthening in unstressed syllables after the shortening in IV.2.1(a) above and there is no difficulty in dating the only reliable example in a stressed syllable, *póc* < *pāc-*, to the same phase. In fine, nothing prevents the indeterminate *srát* and *póc* being grouped with *cáise* and *oróit* respectively.

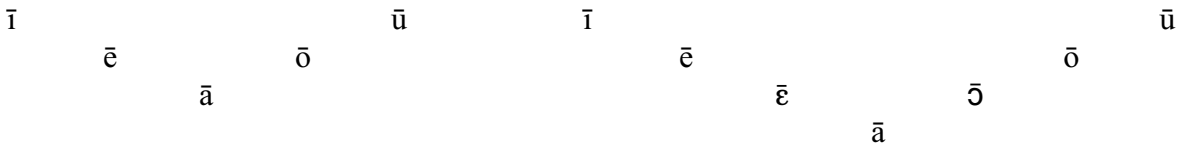
There is, then, no likely example of *ó* rather than *á* as the Old Irish reflex of British Latin *ā*/ɔ in loanwords predating the early sixth-century lengthening of stressed (initial) or unstressed (non-initial) vowels in compen-sation for the loss of certain fricatives before *r*, *l* or *n* (IV.5.1) seen in OIr. *én* `bird' < **etnos* (MW *ed(y)n* `bird') < **pet-no-s*; OIr. *cenél* `clan' < **kenet-lom* (OW *cenetl*, MW *kenedyl*, ModW *cenedl* `clan'). It seems legitimate to ask whether there is any connection between these two developments.

By ascribing the difference between fifth-century *cáise*, *srát* and sixth-century *oróit*, *póc* to British rounding of *ā* circa 500 A.D. without more ado Jackson uncharacteristically departs from his usual sound practice of considering the phonological system of the target language at the time of the borrowings as well as that of the source language. Once this crucial factor is taken into account, the Old Irish forms cease to have any bearing upon non-rounding versus rounding in British.

Whether by inheritance from Insular Celtic or as a result of a parallel but independent monophthongisation of *ow* > *ō*, Primitive Irish had a set of long vowel phonemes virtually identical to that of Proto-British (stage I above), namely low *ā*, relatively close or mid high *ē*, *ō* and high *ī*, *ū* as on the left below. At this stage the obvious native sounds to substitute for an alien mid low rounded back ɔ̄ in borrowings from British Latin were low unrounded back *ā* or mid high rounded back *ō*. Since the probably mid high rounded British Latin *ō* was usually represented by the virtually identical Irish *ō*, as in Old Irish *scúap* /skuab/ `broom' (< **scōb*) from British Latin *scōpa* /skōba/, only *ā* remained as a phonemically unambiguous Primitive Irish substitute for British Latin ɔ̄. Consequently Old Irish *cáise*, *srát* and so on do not necessarily presuppose contemporary British Latin /kāseus/ and /strāda/ rather than rounded /kɔ̄seus/ and /strɔ̄da/ at the time of borrowing.

2.7 As far as the later substitution seen in Old Irish *póc*, *oróit* etc. is concerned, the crucial point is that this apparently postdates the compensated loss of various spirants before a liquid or nasal seen in *én* and *cenél* above. The *ē* resulting from this compensatory lengthening was clearly different from the one inherited from Proto-Celtic. Old *ē* was retained before a palatal but had undergone breaking to the diphthong *ía* before a non-palatal consonant by about 700 A.D., whence frequent alternations such as those between Old Irish nom. sg. *cíall* `sense', *fíach* `debt' < **kēL*, **fēx* and gen. *céille* /kēL′e/, *féich* /fēx′/. The new long *e* by contrast remained unchanged before a non-palatal while developing into a rounded diphthong before a palatal liquid or nasal as in Old Irish nom. sg. *én*, *cenél* < **eθn*, **keneθl* vs. gen. *éoin*, *cenéoil* < **eθ′n′*, **keneθ′l′* (V.4.1). Since inherited *ē* was probably mid high as suggested by Jackson, the new long *e* by compensation presumably differed from this in being more open, i.e. mid low. Its arrival on the scene produced minimal pairs such as the **wēn* (< **wēðnā*) and **wɛ̄n* (< **weγnos*) underlying Old Irish *fían* `warrior band' and *fén* `waggon'.

Although there is no correspondingly firm criterion for differentiating the new long *o* by compensatory lengthening from inherited mid high *ō*, there is nothing to contradict the reasonable assumption that the situation was parallel to that of ɛ̄ and *ē*, whence OIr. *úan* `lamb' < *ɔ̄*n* < **oγn* < **oγnah* < **ognos* (MW *oen*; cf. OIr. *túath* `people, kingdom', MW *tut* < **tōtā* in 2.1a) and OIr. *brón* `grief' < **brɔ̄n* < **broγnah* < **bruγnah* (MW *brwyn*). If so, the system of seven long vowel phonemes on the right below will have resulted.



Once Irish had acquired an ɔ̄ similar to the British and British Latin outcome of *ā* in this way, it will have been the obvious equivalent for the latter in loanwords, whence OIr. *póc*, *oróit* etc. Prior to this development, however, *ā* was the only convenient substitute available in Irish, whence *cáise*, *srát* etc. In short, this shift from *ā* to *ō* in borrowings from British Latin can be adequately accounted for in terms of a change in the Irish phonemic system, thus rendering the postulate of British *ā* > ɔ̄ around 500 A.D. quite unnecessary as an explanation. That being so, we are free to assume that the British sound rendered by Irish /ā/ here was [ɔ̄] rather than [ā] and the only serious obstacle to dating British *ā* > ɔ̄ as far back as the end of the third century disappears. In short, stage V probably succeeded stage IV above quite quickly in British and the first and second vowel shifts summarised earlier may be taken to have been complete by about 300 A.D.

3.1 FURTHER EROSION OF PHONEMIC LENGTH. Comparison of the resultant system of long vowels with the hitherto essentially unchanged set of five short vowel phonemes reveals some reduction in the role of length as a distinctive feature. It had ceased to be phonemically indispensable at the three points in bold italics out of a total of eleven below (for convenience /ɛ̄/ rather than /ē/ is selected as the correlate of /e/, which may well have been [ɛ] phonetically or have had both [e] and [ɛ] allophones).

Stage Vb
(short and long vowels)

i				u		ī		**ü**		ū
							ē			
	e			o				ɛ̄	ɔ̄	
			a							

3.2 Movement away from phonemic correlations of length was then decisively advanced by three further shifts.

(a) Unrounding of *ü* (< *ū* by 1c) to *ī*. This change is not only directly observed in examples like MW *ki* `hound' < *\*kī* < *\*kü* < PC *\*k(w)ū* (OIr. *cú*) or *kil* `back' < **kül-* < IC **kūlos* (OIr. *cúl*) with the same vowel as MW *hil* `seed' < PC *sīlom* (OIr. *síl*) etc. but was also responsible for the final *i*-affection seen, for example, in MW *kereis* `I loved' < **karass-ī* < **-ü* < PC **-ū* (OIr. *-carus*) < **-ō* (Lat. *reg-ō* etc.). Clearly, then, *ü* > *ī* had occurred before final *i*-affection (*LHEB* 319-21), which is dated by Jackson to the late fifth or early sixth century before the loss of final syllables (*LHEB* 603). This

terminus post quem non may be matched by a *terminus ante quem non* deduced from the substitution for final Latin *-ō* indicated by MW *dreic* `dragon' < **dragī* (< **drakü* ?), which Jackson (*LHEB* 302-3) considered best explained in terms of a vowel still rounded when Latin words were being borrowed into British from the second to the fourth centuries. A fifth-century date thus seems reasonable for *ü* > *ī*, Jackson plumping for the middle of that century (*LHEB* 319). McManus (1984, 152-3), however, has argued convincingly that the substitution for Lat. *-ō* underlying MW *dreic* etc. was not a phonologically but a morphologically motivated one involving the assimilation of a Latin to a British *n*-stem pattern. In that case the nom. sg. could have been **-ī* at the time just as well as **-ü*, Jackson's *terminus ante quem non* falls and an earlier date for *ü* > *ī* becomes a possibility.

(b) (*ō/oi* > by 2.1a/b) *ū* > *ü*, spelt *i* or *u* in Old and *u* or *v* in Middle Welsh, e.g. MW *llu* or *llv* /ɬü/ `host' < OW **ɬüγ* < **Lūγ-* < IC **slōgos* (OIr. *slóg*, *slúag*). Bede's early eighth-century *Dinoot* /dünɔ̄d/, MW *Dunawt* < Lat. *Dōnātus* is the earliest example of this fronting, which Jackson (*LHEB* 309-11 and 315-7) dates to the sixth century although a still earlier date can hardly be ruled out.

(c) The first significant shift in the short vowel phonemes inherited from Insular Celtic, namely *i* > *ɪ* (spelt *i/e* in OW/B/C; MW *y/i*, MB *e*, ModW *y*) as in OW/B *celmed*, MB *caluez*, MW *celuit*, *keluyd*, ModW *celfydd* `able, expert' < **kalmiyos* (OIr. *calmae* `strong, brave'). As a result the British reflexes of Proto-Celtic *i* are the same as those of the Proto-Celtic allophone [ɪ] of /e/ before nasal plus obstruent (III.5.1) seen, for example, in OB *hint*, MW *hynt*, MB *hent* `way' < PC **sɪntus* (OIr. *sét*) < **sentus*. In essence, then, the reflex of PC /i/ merged with the [ɪ] inherited as an allophone of /e/ to produce a single phoneme in British Celtic. Orthographic hesitation between *i* and, more rarely, *e* in Old Welsh, Cornish and Breton sources points to a sound intermediate between high front *i* and mid front *e*, the obvious candidate being an English-style mid high front /ɪ/. This, indeed, is the value ascribed by Jackson to the Old Cornish and Breton reflexes (*LHEB* 284).

3.3 The reflex of this sound in Middle Welsh final syllables is usually spelt *y*, whereas *i* there normally represents the outcome /i/ of *ī* (including < *ū* by 3a and 1c) and *u/v* stands for /ü/ (< *ū* < *ō* and *oi* by 3b and 1a/b). In early Modern Welsh *u* begins to be confused with *y*, a state of affairs reflected in present-day North Welsh pronunciation of both as high central unrounded /ɨ/ vs. high front /i/ for *i*, e.g. *bys* /bɨs/ `finger', *mul* /mɨl/ `mule' but *mil* /mil/ `animal', *mis* /mis/ `month'. South Welsh now has /i/ for both, but contrasts like that between SW *bys* /bis/ and *mis* /miʃ/ show that this merger postdates *s* > ʃ after a high front unrounded vowel there. It follows that Middle Welsh *y* in final syllables represented high central /ɨ/ as in Modern North Welsh.

Although Old Welsh orthography does not distinguish *y* from *i*, the existence of a difference in pronunciation there requires, in Morris Jones' succinct words, `no further proof than that they are different in origin, and if the difference had been lost it could not have been recovered' (1931, 15).

Jackson disputes Pedersen's (*VKG* I 377) view that PC *i* (including < *e* before nasal plus obstruent) was once mid high front [ɪ] throughout British on the following grounds (nb. [ï] instead of [ɨ] in his notation): `this occurs only in internal affection, which is late (seventh to eighth century, see §176), and *i* must have become *ï* before then (see below). There is no real reason why [ï] should not cause metaphony (which is all that is involved) of *a,o,u,e*. It must indeed have become *ï* before about 600, when the new type of vowel quantity came into existence (see §35), because original long *i* remained a front vowel, and if original *i* in a word like Pr.W. **sicc* was not already *ï* it would have been lengthened to *i* and would have given W. [i], not [ï] as it did, so that we should have had W. **sich*, not *sych*. Hence it must have been **sïcc* already before the rise of the new quantity system. It was, however, not yet *ï* when W. and CB. diverged over this matter, since Brit. *i* gave *į*, not *ï*, in PR.CB. perhaps in the first half or not later than the middle of the sixth century (see below). One may suggest, therefore, some time in the earlier part of the sixth century, or perhaps the middle, as the date for Brit. *i* > *ï* in Pr.W.' (*LHEB* 283-4).

3.4 The case for an early sixth-century dialectal split between SWBrit. mid high front [ɪ] (= OC/B *i/e*, MC/B. *e* [e]) and WBrit. high central [ɨ] (= OW *i*, MW *y*) dissolves on closer inspection. Although not conclusive, the fact that the internal *i*-affection of *o* to *e* seen in OW *emid*, MW *euyd* `bronze' < **omiyos* (OIr. *umae*) is based on fronting rather than raising speaks for Pedersen's mid high front [ɪ] rather than Jackson's high central [ɨ]. More importantly, Jackson's point about *sych* etc. only excludes a high front [i] precisely equivalent to [ī] in all but length and does not apply to a mid high front [ɪ] that did not, after all, fall together with the reflex of [ī] in Cornish and Breton as a result of the new quantity system, e.g. MB *quic* `flesh' (OB, MW *cic*), *guir* `true' (OB/C/W *guir*, MW *gwir*), *quil* `back' (OB/C *cil*, MW *kil*) with /i/ < /ī/ vs. MB *pec* `pitch' (OB *pic*, W *pyg*), MB *lenn* `pool' (OB/C *lin*, MW *llynn*) with /e/ < /ɪ/.

Jackson's (*LHEB* 696) late sixth- to early seventh-century date for the rise of the new quantity system is very close to that of compensated loss of *x* between *i* and *t* in MW *brith*, *nith* above. His scenario entails development from **brɨxt*, **nɨxt*, but these should have yielded MW **bryth*, **nyth* for the same reasons as those just advanced for *sych* unless loss of *x* is dated a little earlier than the rise of the new quantity system. Compensatory lengthening of high central [ɨ] to the only high unrounded long vowel available at that stage,

namely high front [ī], then becomes feasible, but that of mid high front [ɪ] to high front [ī] under the same conditions is still easier to envisage. Finally, the evidence of Old Welsh, Old Breton or Old Cornish orthography, although not conclusive, is perfectly compatible with a virtually identical pronunciation of the reflex of short *i* (< PC *i*, *ɪ* and, by final *i*-affection, *e*) in all three for at least the earlier part of the period (c. 8th.-12th. cent.) in question. The most economical way of accounting for this evidence is to posit a general British merger of the *i* continuing PC *i* as well as the outcome of PC *e* by roughly later fifth-century final *i*-affection with the *ɪ* continuing the PC allophone of *e* before nasal plus obstruent to produce a new phoneme /ɪ/ throughout. Thus, although the Middle and Modern North Welsh reflex represented by *y* was high central [ɨ], this was not necessarily the case in Old Welsh, which could perfectly well have had the same [ɪ] as Old Cornish and Old Breton here. The new mid high short /ɪ/ phoneme now, of course, differed from high front long /ī/ in height as well as length.

3.5 Like *i* > *ɪ* in 3(c), the fronting of *ū* > *ü* in 3.2(b) can be motivated by the drift away from phonemic oppositions based on length only and provides the obvious knock-on trigger for the unrounding of *ü* to *ī* in 3.2(a), which ultimately led to its complete merger with a hitherto distinct /ī/ phoneme inherited from Proto-Celtic. Obviously *ü* > *ī* must predate final *i*-affection in the second half of the fifth century. A push chain would make *ū* > *ü* earlier still, but not by much, and a fifth-century date seems plausible for *i* > *ɪ*. Indeed, direct evidence may be available in the form of fifth-century British Latin spellings like NOMENA for *nomina*, EMERETO for *emeritus* and CUNEGNI for *Cunigni* (*LHEB* 191). The later fourth and/or earlier fifth century, then, probably saw the transformation of stage Vb above to stage VI below as a result of this tripartite third vowel shift. As the bold italics indicate, straightforward phonemic oppositions of length had by now been thoroughly marginalised to short versus long *e* and *o* only.

Stage VI

				u		**ī**		**ü**		
ɪ							**ē**			
	e		o					ɛ̄	ɔ̄	
		a								

3.6 The case made above for mid high front /ɪ/ as the reflex of earlier high front /i/ etc. in Old Welsh, Cornish and Breton would be strengthened if a satisfactory motive could be found for its replacement by high central [ɨ] by the Middle Welsh period. This brings us to the roughly mid-fifth-century umlaut

of short *e*, *u* and *o* by *i* in a final syllable subsequently lost in the general apocope (*LHEB* 579-603). This `final *i*-affection' may be illustrated by Middle Welsh examples such as *ych* `ox' < **uxsī*, *cyrn* (B *kern*) `horns' < *\*kornī* (sg. *corn* < *\*kornos*; OIr. *corn*), *efengyl* `Gospel' < Lat. *evangelium*. These show that, where epenthesis did not take place, the vowel produced by this umlaut shared the fate of old short *i*, producing high central [ɨ] written *y* in Middle Welsh and *e* from mid high front [ɪ] in Middle Breton. However, Jackson (*LHEB* 586-7) points out that umlauted *o* was still rounded and behaved like *u* when a guttural fricative became yod before *t* and *n* no earlier than the late sixth century on the evidence of Anglo-Saxon placenames of British origin. Thus MW *wyn* `lambs' < *\*ʉγn* < *\*ʉγnī* < *\*ognī* (sg. *oen* < *\*oγn* < *\*ognos*; OIr. *úan*) and *wyth* `eight' < **ʉxt* < **ʉxtī* < **oxtī* < PC **oxtū* < **oktō*. As is evident from the parallel between MW *nith* `neice' < *\*nīt* < *\*nɪxt* < *\*nixtī* < *\*nextī* (OIr. *necht*; PIE *\*nept-ih*$_2$, cf. Lat. *neptis*, Skt. *naptī*) by raising and *brith* `speckled' < **brīt* < **brɪxt* < unraised **brixtos*, there is no impediment to formulating final *i*-affection of *e* as raising and fronting to [i]. However, *o* cannot have been umlauted to a high back rounded [u] while old *u* was left unaltered, since in Middle Welsh final syllables *u* remained unchanged as in *dwuyn* /duvn/ `world' < **dumnos* whereas umlauted *o* or *u* had been unrounded to high central [ɨ] as in *ych* and *cyrn* above. This suggests that final *i*-affection fronted *u* and raised and fronted *o* to a high central rounded [ʉ]. This sound will have been phonemicised by the loss of final syllables towards the end of the fifth century to produce stage VII below, in which length continued to be phonemically relevant for the pairs *e*/ɛ̄ (or *ē*) and perhaps *o*/ɔ̄ at most.

Stage VII

								ʉ		**u**				**ī**				**ü**		
ɪ																**ē**				
		e						o										ɛ̄		ɔ̄
						a														

4.1 EMERGENCE OF THE NEW BRITISH SYSTEM. This brings us to the final sequence of developments whereby vowel length became first phonemically redundant and then synchronically predictable throughout. We may begin by noting the following remark about the English vowel shift: `phonological experience shows that an opposition of quantity rarely survives when it is restricted to two pairs. This duality is abolished by the diphthongisation of the long vowels' (Martinet, 1955, 253).

Absence of length became phonemically irrelevant in the case of short /e/ when its long correlate, whether mid high /ē/ or mid low /ɛ̄/, was diphthong-

ised and thus left the vowel system. These had become the rounded diphthongs /ui/ and /oi/ respectively by the time of Old Welsh, as can be seen from (a) OW *duiu*, MW *dwyw* `God' < *\*dēw* < PC *\*dēwos* < PIE *\*deywos*, OW *luit*, MW *llwyt*, *llwyd* `grey', Rom.-Brit. *Leto-cetum* `Grey-wood' < PC *\*lētos* (OIr. *líath* `grey') and (b) OW *coit*, MW *coet*, *koed* `wood' < \*kɛ̄*to-* < \**kaito-*, MW *hoed(y)l* `life' < **sɛ̄tlo-* < **saitlo/ā-*. Since, however, placenames borrowed into Anglo-Saxon normally show reflexes of British *e*, Jackson concludes that this rounding had not taken place before well into the seventh century. However, reluctance to date a circumstantial diphthongisation attested in Old Welsh, Cornish and Breton `later than the time when the three Brittonic languages separated' (*LHEB* 334) led him to follow Förster in positing a sixth-century diphthongisation of ɛ̄ and *ē* to ɛ̄*i* and *ēi*. In this way the Anglo-Saxon reflexes could be accounted for and a common diphthongal base provided. In Jackson's view the end of Common British is marked by loss of direct land communications between Wales and Southwest England after the Anglo-Saxon advance to the upper Severn estuary around 600 A.D. This is too rigid and probably pays insufficient attention to maritime connections, since even Jackson must admit that a number of identical developments like internal *i*-affection and retraction of the accent actually did take place in Wales, Cornwall and Britanny in the succeeding centuries.

The question of date will be returned to in 4.4 below. What matters for present purposes is that diphthongisation, whether directly to *oi* and *ui* or via ɛ̄*i* and *ēi* at first, removed these phonemes from the plain vowel system (before the middle of the sixth century according to the relative chronology in 4.4), thus eliminating what was probably the last remaining phonemic distinction involving length only. Although length was most likely the sole distinctive feature available to differentiate short *e* from one or other of the two long *e*-phonemes prior to their diphthongisation, this is unlikely to have been the case with *o*/ɔ̄. As pointed out earlier, the long ō (> *ū* > *ü*) in the tightly symmetrical Proto-British system was probably a mid high back rounded vowel and this creates a presumption that its short counterpart was likewise mid high *o*. The new ɔ̄ from Proto-British *ā* was, by contrast, mid low and, as we shall see, did not fall together with original *o* when shortened in pretonic position. Phonetically, then, *o* and ɔ̄ differed in height as well as length. Consequently height was almost bound to replace length as the phonemically relevant distinctive feature in tandem with the steady decline in length's phonemic significance in the system as a whole. The upshot was the early sixth-century stage below, a vowel system in which length was the phonemically irrelevant concomitant of some articulations but not others.

Stage VIII

ī ü ʉ u

ɪ o

e ɔ̄

a

4.2 Thereafter the redistribution of the phonetic feature ±*length* res-ponsible for the new quantity system could take place without affecting the phonemic inventory at all.

Penultimate stress became word-final as a result of the extensive loss of final syllables in British around the end of the fifth century (stressed vowel in bold): e.g. (MW *mawr*) **mɔ̄r* `great' < *\*mɔ̄rah* < PC *\*māros*, (MW *byt*) *\*bɪd* `world' < **bituh* < PC **bitus*, (MW *trwm*) **trumm* `heavy' < *\*trumbah* <PC *\*trumbos*, (MW *bard*) *\*barð* `bard' < **bardah* < PC **bardos*, (MW *gwisc*) **wīsk* `clothing' < *\*wīskā*, (MW *llydan*) *\*ɬɪdan* `broad' < **ʟitanah* < PC **litanos*, (MW *Nadolyc*, *Nodolyc*) **nɔ̄dɔ̄lɪg* `Christmas' < *\*nɔ̄tɔ̄likyā* < Lat. *nātālicia*, (MW *uchel*) *\*üx(s)el* `high' < **ūxselah* < PC **ouxselos*. Three further developments were responsible for the eradication of independent length. Firstly, long pretonic vowels were shortened, whence **nɔdɔlɪg*, **üx(s)el* etc. but unchanged **mɔ̄r*. Secondly, stressed short vowels were lenghtened unless followed by a double consonant or a consonant cluster, whence **bīd*, **ɬɪd̓ān*, **nɔd̓ɔlīg*, **üx(s)ēl* but unchanged **barð*, **trumm*. Thirdly, stressed long vowels were shortened before such consonant groups, whence **wisk* but unchanged **mɔ̄r*. The cumulative result of these three processes, which were not neces-sarily simultaneous, was a new quantity system in which vowel length or the lack of it had become mere mechanically conditioned allophonic concomitants of stress and syllable shape throughout.

4.2 One development apparently confined to the West British precursor of Welsh was the change of short pretonic *ɪ* and *u* to rounded and unrounded mid central schwa vowels ə and ɵ respectively. However, these had fallen together by the end of the Old Welsh period as unrounded schwa, usually written *y* in Middle Welsh: e.g. MW *ynys* [ənɨs] `island' < *\*ɪnɪs* < *\*inissī* (OIr. *inis*), MW *tyner* [təner] `tender' < **tɪner* < Lat. *tener*, MW *kymar* [kəmar] `equal, mate' < *\*kəmpar* < *\*kumpar* < Lat. *compar*, MW *ychen* [əxen] `oxen' < **ɵxen* < **uxen* < **uxsenes*. This weakening (*LHEB* 664-81) should have affected any unstressed short high vowel and so probably took place before the general pretonic shortening of long *ī*, *ü* etc. discussed in the preceding paragraph. It need concern us no further here since, as mere pretonic allophones of short /ɪ/ and /u/, [ə] and [ɵ] did not add to the phonemic inventory.

4.3 As far as the date of the pretonic shortening in open syllables is concerned, Old Irish *Notlaic* `Christmas' must have been borrowed as /nɔdɔlig/ at some stage later than pretonic shortening of long mid low ɔ̄ in British but after apocope and before syncope in Irish. A date in the first half of the sixth century for this borrowing is indicated by the conventional dating of Primitive Irish apocope and syncope to about the beginning and the middle of the sixth century respectively. Since this is unlikely to be far out, the middle of the sixth century would emerge as a *terminus post quem non* for pretonic shortening in British or rather in Welsh open syllables (4.4).

As pointed out earlier, in Old and Middle Welsh final (i.e. Old Welsh stressed) syllables the reflexes of ɛ̄, *ē* and ɔ̄ were the diphthongs *oi* (*oe*), *ui* (*wy*) and *au* (*aw*) respectively. Sims-Williams (1990, 253-4) ascribes this develop-ment to pressures generated by the rise of the new quantity system: `the lengthening of tonic short vowels in V(C) syllables and the shortening of tonic long vowels in VCC syllables resulted in a great increase in the number of vowel phonemes in tonic syllables. Thus in primitive Welsh the old short vowels (other than the solely pretonic ones of course) gave rise to *new long vowels* [ï: e: a: o: u:] and conversely the old long vowels [i: ü:] gave rise to the *new short vowels* [i ü]... The advent of so many new vowels must have put considerable strain on the system. I would suggest that this strain precipitated or confirmed further changes which removed certain old long vowels from the vocalic system and hence from the sphere of the new quantity system in monophthongs: [e:] > [ui], [ę:] > [oi], [ɔ:] > [au]. These diphthongizations are treated and dated separately by Jackson, but the dating evidence is not exact enough to oppose a reassessment based on structural considerations... The diphthongization of old [e: ę: ɔ:] must therefore be synchronized with, or dated earlier than, the development of the new quantity system'.

Since the new long and short vowels generated in stressed V(C) and VCC syllables respectively were merely allophones in complementary distribution with the corresponding old short and long vowels kept in VCC and V(C) stressed syllables respectively, the new quantity system did not increase the number of vowel phonemes. Moreover, although it is structurally tempting to link the diphthongisation of ɔ̄ with that of ɛ̄ and *ē*, its restriction to Welsh is worth bearing in mind, since the other two occur in Cornish and Breton as well, and Schrijver's scenario in 4.4 below does in fact make it necessary to date *ē* > *ui* in British before ɔ̄ > *au* in Welsh.

4.4 A form like Middle Welsh *Nodolyc* `Christmas' and alternations of the type Middle Welsh sg. *brawt*, pl. *broder* `brother(s)' < **brɔ̄d(r)*, **brɔ**d**er* < **brɔ̄d(r)*, **brɔ̄d**e**r* show that long ɔ̄ was still a monophthong when pretonic shortening took place. One might argue that, had the same been true of long ɛ̄ and *ē*, Middle Welsh nouns like *bwyt* `food' and *coet* `wood' < **bēd*, **kɛ̄d*

should have acquired plurals like **bedeu*, **cedyd* rather than the actually attested *bwydeu*, *coedyd*. The absence of such reflexes would then point to the conclusion that the general British diphthongisation of both *ē* and ɛ̄ discussed in 4.1 had occurred before the sixth-century pretonic shortening, whereas the Primitive Welsh diphthongisation of stressed long ɔ̄ to *au* seen in OW *braut* < **brɔ̄d*, *maur* < **mɔ̄r*, *marchauc* `rider' < *\*marxɔ̄g* (MW *brawt*, *mawr*, *marchawc*) took place after it as Jackson thought (*LHEB* 695 and 697). However, Schrijver (1995, 243-52) has identified a number of likely instances of pretonic shortening of *ē* to *ɪ* such as MW *blyned* `years' beside *blwyd*, the MW variant *byta* of *bwyta* `eat' (remodelled from *bwyd* `food'), MW pl. *morynion* vs. sg. *morwyn* `maiden' and suggests that the distribution of pretonic *wy* and *y* reflexes can be best explained by restricting the shortening to closed syllables. Contrasts of the type MB *mozreb* reflecting pretonic shortening of ɔ̄ versus *beure* `morning' based on unshortened ɔ̄ indicate that this too was confined to closed syllables as a pan-British phenomenon. Schrijver then argues that pretonic shortening in open syllables was confined to Welsh and affected ɔ̄, as in MW *bore* `morning', but not ē because the latter had meanwhile been diphthongised to *ui* but the former had not. This implies the following relative chronology (Schrijver, 1995, 252): (i) pretonic shortening of *ē*, ɛ̄ and ɔ̄, (ii) diphthongisation of *ē* and ɛ̄, (iii) pretonic shortening in Welsh open syllables (by the middle of the sixth century according to 4.3), (iv) Welsh diph-thongisation of ɔ̄ to *au*.

It is not possible to date Welsh ɔ̄ to *au* in relation to the lengthening of stressed vowels above. However, English placenames of British origin do provide some evidence, albeit conflicting. New long vowels are found, in Sims-Williams' words, `in monosyllabic English names as far east as Somerset (Tone), Lancashire (Roose, Leece, Preese), Shropshire (Prees), and even the East Riding of Yorkshire (Roos). Jackson contrasts these with names retaining short vowels stretching as far west as Wiltshire (Biss), Hampshire (Liss), and the West Riding of Yorkshire (Nidd)' (1990, 242). If the derivation of Roose in Lancashire from **Rōs* (W *rhos* `moor, OIr. *ros* `wood (esp. on a promontory)' < **rosso/ā-)* is also valid for Roos on the Humber, the latter alone is sufficiently far east to require a sixth- rather than a seventh-century date for the lengthening of stressed vowels. However, it then becomes difficult to understand the survival of short-vowel forms much further west like Ross from the same etymon right over in Herefordshire. On the whole, this derivation of Humberside Roos creates more problems than it solves and must, therefore, be considered uncertain. If so, there is no compelling reason to date the lengthening of stressed vowels to the sixth rather than the seventh century. On the other hand, with the arguable exception of Ross in Herefordshire, none of the short-vowel placenames mentioned need have been borrowed later than

the sixth century.

A further significant datum seems to have been ignored hitherto in discussions of this question, namely the lengthening of short mid high front *ɪ* to long high front *ī* in compensation for a lost voiceless guttural fricative before *t*, as in MW *brith* `speckled' < *\*brīt* < *\*brɪxt* < *\*brixtos*. If long mid high [ī] had already been brought into existence by allophonic lengthening, the vowel of *\*brɪxt* would presumably have been lengthened to this sound to yield Middle Welsh *\*bryth* parallel to *sych* `dry', as already suggested earlier, instead of actually attested *brith* `speckled'. If, on the other hand, it had not, then high front *ī* would have been the only front unrounded long vowel available, as a glance at stage VIII above shows. That being so, the mechanical lenghtening of stressed vowels in auslaut or before a single consonant will have occurred after reduction of the cluster *xt* in the late sixth or early seventh century since, to quote Jackson (*LHEB* 411), `the evidence of inscriptions and place-names shows ... clearly that *xt* lasted until the second half of the sixth century; but cannot be held to prove in any given case that it continued into the seventh'.

As to the concomitant shortening of stressed vowels before a consonant group, Sims-Williams (1990, 254) is certainly right to insist that Welsh diph-thongisation of ɔ̄ to *au* must have preceded this. Otherwise one would expect shortened **sodl*, **Morth* rather than actually attested *sawdl* `heel', *Mawrth* `Tuesday, March' < **sɔ̄dl*, **Mɔ̄rt* < **stā-tlo-*, Lat. *(diēs, mensis) Mārtis* with a Welsh diphthong deriving from still long stressed ɔ̄.

4.5 We may, then, conclude that rationalisation of stage VIII was initiated by pretonic shortening in the first half of the sixth century and completed by the shortening of long stressed vowels before consonant groups in the course of the seventh. Diphthongisation of ɔ̄ > *au* belongs somewhere in between, probably the early seventh century, as does the lengthening of stressed vowels not followed by a consonant group. Alternatively, this and the complementary shortening may have been more or less simultaneous. At any rate, the new quantity system cannot properly be said to have come into being until all three of these processes had taken place. Consequently the progression from stage VIII above to the southwestern (> Cornish, Breton) stage IX(a) and the western (> Welsh) stage IX(b) below took quite a long time and was not completed until some point in the seventh century.

Stage IX(a)

i	ü	ʉ	u
ɪ			o
	e	ɔ	
		a	

Stage IX(b)

i ü ʉ u

ɪ

e o

a

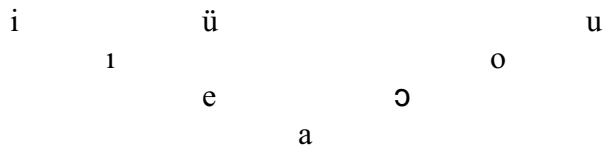
The long and short vowel allophones [a]/[ā] etc. ignored in the above tables of phonemes would seem to have been complementarily distributed along the lines indicated for much of the Old Welsh, Old Cornish and Old Breton periods that are of primary concern here. When, however, the accent was later retracted from the ultimate to the penultimate of polysyllables, newly unstressed final long vowels were shortened and newly stressed penultimate short vowels in open syllables became `half-long' (here indicated by ˙), whence the [ɬ'ə˙dan] and [nod'o˙lɪg] ultimately reflected in the pronunciation of Modern Welsh *llydan* `broad' and *Nadolig* `Christmas'.

The crucial difference between southwestern IX(a) and western IX(b) results from the former's preservation and the latter's loss of the mid low /ɔ/ phoneme (subsequently > /ö/ in SW). Since seventh-century internal *i*-affection fronted and unrounded old short *o* in pretonic syllables in the manner seen in **molīn* > MW *melin* `mill', *\*oṽɪd* > OW *emid*, MW *euyd* `bronze' but did not affect the pretonically shortened long vowel in a word like **Nɔdɔlɪg* > MW *Nodolyc*, these two sounds must still have been distinct at that time. However, they fell together subsequently as unstressed *o* in West British and there is no obvious obstacle to synchronising this with the diphthongisation of stressed long ɔ̄ to *au* there. Hence the disappearance of both stressed and unstressed forms of the phoneme by stage IX(b) and before completion of the third and final stage of the new quantity system. In Cornish and Breton, however, /ɔ/ was retained as a separate phoneme, eventually being fronted to [ö].

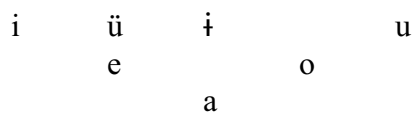
4.6 There remained one last step to be taken in order to remove the preponderance of rounded over unrounded high vowels in stages IX(a) and (b). This was effected by the roughly eighth-century unrounding of high central /ʉ/ to /ɨ/, which then merged with mid high front /ɪ/. However, this merger took place in opposite directions in the two branches, high central /ɨ/ being generalised in Welsh whereas mid high front /ɪ/ triumphed in Cornish and Breton. The result was stages X(a) and X(b) below, both quite balanced in their own ways. The Old Cornish and Old Breton system in X(a) comprised four unrounded (/a/,/e/,/ɪ/,/i/) and four rounded (/ɔ/,/o/,/u/,/ü/) vowel phonemes and displayed an ascending scale of phonemically relevant features on a low-high axis: low /a/ (height only), mid /e//ɪ//ɔ//o/ (height plus front/back or unrounded/rounded), high /i//ü//u/ (height plus front/back plus unrounded/ rounded). The seven-vowel system of Old Welsh by contrast opposed three

rounded to three unrounded vowels in addition to unpaired low /a/, had only one pair of mid vowels /e//o/ (height plus front/back or unrounded/rounded), but no less than four high vowels /i//ü//ɨ//u/ (height plus front/central/back plus unrounded/rounded). Given that ʉ > ɨ may not have occurred before the later eighth century as suggested above and logically precedes *ɪ* > ɨ, the latter stage can hardly have been attained before the ninth century. Moreover, although systemic pressures make a fairly rapid eighth- and ninth-century evolution likely, a later date for completion of the process cannot be definitely excluded.

Stage X(a)



Stage X(b)



In conclusion, a series of structurally motivated shifts dramatically transformed a Proto-British vowel system opposing five short to five corres-ponding long phonemes into various Late British systems from stages VIII to X in which presence or absence of length had become a mechanically conditioned allophonic concomitant of from nine to seven qualitatively distinct vowel phonemes.