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Post-glacial marine shell-beds in Bohuslän.

By

ERNST ANTEVS.

Contents.

Introduction.

Professor GERARD DE GEER made in Bohuslän, especially in the years 1889, 1890, and 1893—95, extensive collections of late-Quaternary marine shell-gravel for the purpose of studying, in accordance with a new stratigraphic-statistical method (DE GEER 1910, p. 1187), the history of immigration, etc., of the mollusc-fauna, the changes of level, and the climatic conditions.

In 1910 he discussed in »Quaternary Sea-bottoms» the most important glacial shell-beds and, preliminarily, some of the post-glacial, but time not allowing him an opportunity, within any proximate future, of elaborating all the rich material he had gathered, he placed in the writer's hands, in the autumn of 1914, *the post-glacial shell-gravel, with which there is here included that (not late-glacial) shell-gravel which lies on and below the limits of the post-glacial transgression.* The receding shore-line's passing the level of the above-mentioned transgression limit is, of course, an arbitrary but, until a connecting-point with the exact chronology has been obtained, a certainly suitable boundary between glacial and post-glacial times.

Thanks to a travelling-scholarship from the Swedish Royal Academy of Science, I was given in the summer of 1915 an opportunity of myself collecting material and studying the occurrence and formation of the shell-beds.

If, in all cases, the writer has followed Professor DE GEER'S arduous methods of investigation, this has been done, because another method with a claim to exactitude is hardly imaginable, and as such an investigation is as good as worthless unless the very greatest exactitude be observed. However, an examination, in accordance with the method mentioned, of a sufficient number of shell-beds ought to lead to a satisfactory solution of the problems in hand. It has, consequently, been found possible to utilize the perfectly unique opportunity presented in the shell-beds of countries which, during the Quaternary age, were covered with ice, of studying the immigration of an animal group and its later fate in a new-born sea-district, questions, too, of very great zoogeographical and biological interest. It has been found possible to throw a light on these important changes of level and to make contributions to the solution of the question of climate which ought to be of special weight in consequence of the relatively very exact determinations of time.

For the determination of the molluscs, use has been made of the collections of the Geological Institution of the Stockholms Högskola, W. C. BRÖGGER's excellent illustrations, and the works of G. O. SARS and J. G. JEFFREYS. With respect to nomenclature and the like, the writer has mainly followed SARS.

The writer desires to express his deep and heart-felt thanks to Professor DE GEER for the generous gift of the very valuable investigation-material, and for the excellent advice and great goodwill shown by him to the writer during his years of study at the Stockholms Högskola. It also gives the writer great pleasure to be able to express here his heartiest thanks to his other esteemed teachers and favourers who during his scientific studies in palaeobotany, botany, and geology, have assisted him with advice and practical help or who have, in any other way, shown their interest in the writer's efforts. Among these the writer wishes to name Professor A. G. NATHORST, Professor G. LAGERHEIM, Professor O. ROSENBERG, State geologist Dr. HENR. MUNTHE and Dr. T. G. HALLE.

The writer is specially indebted to Dr. NILS ODHNER for his determinations of divers molluscs, and to Fil. Lic. RICHARD HÄGG for literary indications.

The writer's best thanks are also due to the Governors of the Geological Association for the opportunity they have given the writer of publishing his paper.

Miss KARIN BUSCH, Fil. Kand. FOLKE FOLKESON, Fil. Kand. ERIK GRANLUND, and Fil. Kand. GÖSTA LUNDQVIST, undergraduates at the Stockholms Högskola, have each carried out the chief part of the work of sorting one sample.

The translation has kindly been carried out by Mr. E. ADAMS-RAY of Stockholm.

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Some molluscs immigrated in the latest fini-glacial time.

First may be given, with Professor DE GEER's kind permission, a list of species found among the fauna of the so-called transitional-beds and which were new occurrences there; in other words, a list of forms that immigrated immediately before the time when the shell-beds treated of in this paper began to be deposited.

There have been examined the shell-beds, the collections from which have chiefly been made by Prof. DE GEER, at Skärjedalen (12 *km* N of Strömstad; according to HÄGG 63 *m* above the sea), Lursäng (16 *km* SSE of Strömstad; cc. 59 *m* above the sea), Oxtorp (9 *km* SE of Strömstad; c. 48—49 *m* above the sea), Gudebo (13 *km* ESE of Strömstad; 48 *m* above the sea), Skärbo (3·5 *km* N of Gräbbestad; cc. 46 *m* above the sea), the lowest sample (27·6 *m* above the sea) at Evenås (1·5 *km* E of Fiskebäckskil; see DE GEER 1910, p. 1172), as well as pickings from the shell-bed at Bredhult (9 *km* N of Strömstad; c. 71 *m* above the sea).

The shell-bed at Skärjedalen is evidently the same that was previously examined by HÄGG (1910, p. 473; see, too, SERNANDER 1910, p. 227 [1]), and whose time of formation was given by him as the post-glacial transgression maximum. This age-determination has, as is well-known, been questioned by MUNTHE (1910, p. 1208), and Prof. DE GEER was inclined, as he informed me, after a slight examination to consider the bed as late fini-glacial, a supposition which has now been found to be correct.

When the shore-line, in early post-glacial time, during the course of its retreat, passed the limit of the post-glacial transgression, the following species had, according to the writer's analyses of the beds mentioned, already made their appearance on the scene in addition to those included by DE GEER in his tables A and B in »Quaternary Sea-bottoms»:

Lepidopleurus cinereus	*Montacuta bidentata*
Craspedochilus marginatus	*Abra cf. alba*
Anomia aculeata	*Solen ensis*
Ostrea edulis	*Thracia villosiuscula*
Nucula nucleus	*Patella vulgata*
Cardium echinatum	*Gibbula cineraria*
» *cf. nodosum*	*Lunatia intermedia*
» *cf. exiguum*	*Onoba aculeus*
» *cf. minimum*	*Rissoa interrupta*
Laevicardium norvegicum	*Skenea planorbis*
Cyprina islandica	*Parthenia spiralis*
Tapes aureus	*Clathurella linearis*
» *virgineus*	*Nassa reticulata*
Lucina borealis	» *incrassata*
Lepton nitidum	*Utriculus umbilicatus*

[1] In consequence of a printing error there stands here »Skönjedalen».

On the division of the post-glacial age and the determination of the time of formation of the shell-beds.

The value of such an investigation as the present, lies, of course, mainly in the degree of exactitude with which the time of formation of the different shell-beds is determined.

An unsought norm for such determination is found in the changes of level, which, as Prof. De Geer pointed out a long time ago, most certainly form the most suitable starting-points for a division of the post-glacial age.

In order to conveniently distinguish the oldest post-glacial regression from that occurring at a later date, the writer proposes the use of the terms »*primo-post-glacial*» and »*sero-post-glacial*».[1]

»The post-glacial transgressional time», »the time of the post-glacial maximum subsidence», and the like, also appear to the writer to be suitable expressions, while the terms »Tapes-time», »Litorina-time», and the like, which, in addition to the unfitness pointed out by De Geer (1912, p. 260), are also unsuitable in consequence of their indefiniteness in point of time, could not be used in the present paper.

By »recent time» is understood in the following pages the time after the cessation of the upheaval of the land.

Below, within and above different shell-beds there occur clays, which, as the conditions of bedding or the faunas show, are undoubtedly derived from the time for the post-glacial transgression maximum.

These clays have served as the first starting-points in the determination of the time of formation of the shell-beds.

In order to obtain an objective view of the composition of the faunas there have been employed Brögger's (1901, p. 570)

[1] The Latin adverbs »*primo*» and »*sero*» signify »*at the beginning*», »*first*», and »*late*».

division in accordance with the existing geographical extension into arctic (a), boreal (b), and lusitanic-mediterranean (l) species, as well as *a division in accordance with the time of immigration into Bohuslän.* According to the latter, the molluscs have, naturally, been divided into as many categories as the shell-beds, which, up to the present, it has been found, can suitably be divided into six groups. The mollusc-groups are, consequently: 1. (gothi-glacial regressional and) *f*ini-glacial *t*ransgressional immigrants, which may be distinguished by »*ft*»; 2. *f*ini-glacial *r*egressional immigrants (»*fr*»); 3. *p*rimo-*p*ost-glacial *r*egressional and *p*ost-glacial *t*ransgressional immigrants (which should properly be marked pprpt, but which, for the sake of simplicity, are distinguished by »*prt*»); 4. forms immigrated during the *p*ost-glacial *t*ransgression *m*aximum (»*ptm*»); 5. *s*ero-*p*ost-glacial *r*egressional immigrants (»*spr*»), and, 6. *rec*ent immigrants (»*rec.*»).

For each shell-bank there have been calculated the specific and individual percentages of the a-, b-, and l-molluscs and of the ft-, fr-, etc.-species found in them. As consideration must, at the same time, be paid both to the specific and individual conditions, it has proved suitable to take the means of the specific and the individual percentages.

These percentage-means for the post-glacial shell-beds which are *superimposed by* clays and examined here find the following expression:

	a	b	l	
Otterö A	12	54	34	
» B	10	35	55	
Fjällbacka	8	63	29	
Rössö-Långö A	9	28	63	
» C	9	28	63	
Torseröd	7	59	34	
Fjälla	9	50	41	
N. Holt	9	52	39	
	9	46	45	means

	ft	fr	prt
Otterö A	23	46	31
» B	16	33	51
Fjällbacka	28	49	23
Rössö-Långö A	17	28	55
» C	18	28	54
Torseröd	27	45	28
Fjälla	25	24	51
N. Holt	20	45	35
	22	37	41 means

while, for the beds which are *superimposed on* post-glacial clays we have the following percent averages:

	a	b	l
Kilarna	9	45	46
Torseröd	7	46	47
Tofterna A	11	59	30
» C	8	39	53
Nötholmen A	8	23	49
» B	9	31	60
Rössö-Långö A	8	29	63
» B	6	31	63
Otterö B	7	30	63
	8	37	55 means

	ft	fr	prt	ptm	spr
Kilarna	20	41	39	—	—
Torseröd	19	41	38	1	1
Tofterna A	18	47	25	3	7
» C	20	31	49	—	—
Nötholmen A	17	32	46	2	3
» B	18	31	50	—	1
Rössö-Långö A	20	19	61	—	—
» B	16	27	57	—	—
Otterö B	21	18	61		
	19	32	48 means		

As will be seen, within each group, with the exception of a couple of beds, the composition of the faunas is fairly similar, especially if respect be paid to the fairly different time of formation of the individual beds. Exceptions in the first group are, of course, formed by Otterö B and Rössö-Långö and in the latter group by Tofterna A. On the other hand, the two groups, compared with each other, present a not unessential difference, consisting chiefly in the greater rôle played by the l- and prt-forms in the latter group. In order to elucidate this there have been calculated the means of the percent averages given.

On the basis of these conditions, by height above the sea-level, by conditions of formation, by frequency and variation of frequency of the shallow-water forms, by stratigraphy, etc., it has been found possible to determine the time of formation of the other shell-beds with, the writer thinks, a relatively high degree of accuracy.

Changes of level.

It is an absolutely indispensable condition, on making the fundamental study of the changes of level of a country, to start from the sea-level and not from more or less hypothetical lake-levels. It is, therefore, on the west coast of Sweden that we have mainly to search for the solution of the questions, of such importance for our geology, of the vertical movements of Sweden during the late-Quaternary age. Here, in Bohuslän, where these movements are best known, their sequence has been as follows:

The receding ice-border was closely followed by an intensive upheaval of the land, which almost had the character of a wave. In consequence of this, the sea-bottom in central Bohuslän, in which district the highest marks of the sea can be traced up to 141 *m*, was uplifted, »so that shell-deposits with mostly littoral species could accumulate where the water had previously been more than 100 *m* deep» (DE GEER 1910, p. 1145).

In fini-glacial age this gothi-glacial upheaval was succeeded by a subsidence, during which the shore-line in the same tract was displaced to 102 or, possibly, 110 *m* above the sea (DE GEER 1910, p. 1170).

This was followed by a new upheaval of the land. When, in primo-post-glacial times, central Bohuslän had reached its greatest height, the shore-line, according to the conditions shown at Otterö (see p. 274) and Fjällbacka (see p. 278), was between the approximate figures of 8 and 17 *m* above the sea.

But a second and final subsidence, the post-glacial, began to make itself felt. On this occasion the central part of Bohuslän came to lie about 37 *m* (Sandbogen; see p. 304) and the most northerly part of the district about 45 *m* lower than they are at present.

Finally came the sero-post-glacial land-upheaval, which came to an end during the latter part of the bronze-age (O. FRÖDIN 1906, p. 33).

After Professor DE GEER has proved the above-mentioned fini-glacial subsidence in Western Sweden, and after the duration of the period that has elapsed since Sweden began to be released from the last ice-covering has become known and has been found to be considerably less than has previously been supposed, some of the previously-existing opinions concerning the late-Quaternary changes of level in Scandinavia and problems connected with this question can hardly be maintained.

Here, in passing, attention may be directed to the possibility of explaining the Ancylus-transgression in the Baltic which, in the opinion of the writer, lies in the fini-glacial subsidence mentioned above.

Fenno-Scandia consisted, as regards the changes of level, of a uniform district, and undulating movements of the crust of the earth propagated themselves from every point in the direction of its centre. At all the different points on each isobase there occurred, as a rule, similar changes of level; an upheaval in Bohuslän was contemporaneous with an upheaval in Västergötland, Östergötland, etc. From a known change of level in the West of Sweden it is, therefore, extremely probable that one can deduce a contemporaneous change of level in the East of the country.

The fini-glacial subsidence in Bohuslän must, consequently, have had its correspondence in the districts on the Baltic, which, at the fini-glacial age, was in its Ancylus-period.

According to MUNTHE (1910, pl. 46 B) the transgression of the Ancylus-Lake extended in the Omberg-district to 75 *m* and, somewhat north of Lake Vättern, to 100 *m* above the sea.

As the isobases in this tract and at the period in question probably ran from W to E, or somewhat SW and NE, the figures hitherto available from the fini-glacial transgression at Uddevalla (see p. 257) and those from the Ancylus-transgression at Lake Vättern, correspond fairly well to each other, if the surface of the Ancylus-Lake, when the limits of the transgression in the district in question were registered, is brought to sea-level, but, preferably, not higher.

The changes of level in Scania, Denmark, and northern Germany, which were of such importance for the Baltic inland-sea, are, unfortunately, very imperfectly known, as the marks of these changes lie, partly or entirely, below the level of the sea.

It is probable that the *first* movement of change of level after the release from the covering of ice, in relation to which the other movements are merely reactional or continuations, has always taken place in that direction which is given by the final result, and that the German north coast took up its highest position, for which DE GEER's (1896, p. 106) approximate figures of 25 to 30 *m* appear theoretically acceptable, just at the time of release from the ice. Lying outside the Fenno-Scandic upheaval-district, and forming a portion of the stable continental block, in whose outermost portions alone the masses, pressed out by the weight of the land-ice, had been able to bring about a disturbance of the isostatic conditions, the coast in question, ever since Scandinavia began to rise, probably found itself in an almost incessant state of slow subsidence.

Within a zone somewhat north of the north coast of Germany there faded out both upheavals and subsidences. From this tract the amount of the rise of the various points grew within a wave-crest until the latter lost itself in the unbroken elevation in the central part of the upheaval-district, while the amount of subsidence within a wave-valley reached its greatest value in the longitude of Halland or Bohuslän in order, surpassed by the intensive upheaval, to run out towards the central of the rising.

When, at the beginning of the gothi-glacial epoch, a mighty upheaval followed the retreating ice-border, this affected central Denmark too (but not the north coast of Germany). When the upheaval attained its maximum, the southern part of the Öresund most certainly assumed the highest position it reached during late-Quaternary time, and then there existed across the Danish islands a land connection between Sweden and Germany. The southern part of the Baltic basin formed, during this period, an ice-lake.

But this upheaval was soon replaced by the fini-glacial subsidence. This land-subsidence is, as is well known, only proved in Bohuslän and in northernmost Jutland (see De Geer 1910, p. 1149), but, with the knowledge we possess of the changes of level its 0-isobase is theoretically to be expected between the 0-isobases for the dani- and the post-glacial subsidences, and nearest to the former. The Belts, and the district between Rügen and Falster were still probably raised that approximately 10 *m* which, in the present day, the thresholds here lie below the surface, so that the Baltic was connected with the Cattegatt only by means of the Öresund.

Then a change of level in an opposite direction began to make itself felt. The district surrounding the Öresund was once more raised, although to a lesser extent than during gothi-glacial time, and the 0-isobase retreated again towards the north — and this time further than during the gothi-glacial upheaval — as is shown by peat-bogs and river-channels below the existing shore-line. The Falsterbo-district was raised to about 8 *m* above sea-level, as is shown by a peat-bog containing oak and hazel with the bottom at a corresponding depth (HOLST 1895, p. 21; see, too, DE GEER 1896, p. 119). The thresholds in the south of the Öresund seem, consequently, to have been upheaved to sea-level.

On the other hand, it is probable that a connection between the Baltic and the Western Ocean was formed by means of the Belts, for here the land-subsidence had gone on so far that the thresholds, now lying about 10 *m* below the surface, were lowered beneath the sea-level, judging by the circumstance that, during the next or the post-glacial subsidence, these tracts occupied the same height-level as they do at present.

Consequently, it seems to the writer not improbable that the Baltic Sea possessed communication with the Ocean through the Öresund and the Belts, or someone of these, ever since the beginning of the gothi-glacial age, with the sole exception of some time during the epoch in question, when the southern part of the Baltic had the character of an ice-lake.

During the fini-glacial and the primo-post-glacial epochs these sounds served to a very preponderant degree as an exit for the enormous water-masses of the Baltic, for the points of passage lay near the sea-surface.

As the rate and amount of the changes of level were greatest during the melting of the ice-covering, while, later on, they successively decreased to zero, the maximum of subsidence of the fini-glacial period was reached at a comparatively early time, while, between Western and Eastern Sweden the distinctive difference in climate still existed which found such a marked expression in the melting of the land-ice.

At the commencement of the melting away of the land-ice the Baltic basin was, of course, filled entirely with fresh water, and received enormously rich supplies of water from the melting ice. From the land-districts there were also conveyed large quantities of fresh water, and there was created a tremendous outward flowing current through the Öresund, the sounds in Central Sweden, and in other places. The Central Swedish sounds were, at first, both deep and wide, so that the reaction-current could bring in through them considerable quantities of, it is true, rather diluted salt water into the Baltic Sea. After the sounds had been elevated above the sea-level, the Baltic (mainly) by Öresund first, and later on by the Belts, may have for a long time been in a connection with the Western Sea, somewhat resembling that in which Lake Mälaren is now united to the Baltic.

In the latter case, the channel at Norrbro, in Stockholm, is exceedingly narrow, and the threshold lies about 4 *m* under the sea-level (SONDÉN 1912). Lake Mälaren has fresh water and the Baltic salt, but if, for any reason, the surface of the water of the Baltic rises above that of the lake, salt water streams into the latter. This water, however, does not mix with the fresh water, but forms certain well-defined beds in the upper water-layers, in which case it is sooner or later carried off by the outward flowing current. The salt water in question also partly finds a resting place at the bottom of the deepest parts of the lake basin. Such salt bottom layers are met with at a distance of as much as some 20 *km* up the lake, and are renewed only to the degree that storms, etc., are able to agitate the water, so that the salt layers rise to the upper waters. Under normal conditions during 1909—11 the salt percentage in the deep-holes in that part of Lake Mälaren called Ekeröfjärden lying about 10 *km* W of Stockholm was 2 ‰, while in the

Trälhafvet, a bay of the Baltic about 20 *km* NE of Stockholm, at a depth of about 10 *m*, the proportion was 5 ‰.

The salt water that entered the Ancylus-Lake by means of the reaction stream; as well as by means of possible up-streams, probably behaved in the same way, and it is quite natural that the water at the surface of the lake during a very considerable period of time remained entirely fresh or almost so. It seems to the writer, too, not improbable, that, to an essential degree, it was the high temperature of the salt water of the Gulf Stream, and of the small specific weight that resulted from this high temperature, which enabled it to mix so with the fresh water of the Baltic during the post-glacial subsidence.

At an earlier date some discussion has taken place respecting the character of the Ancylus-Lake as a fresh water basin (see MUNTHE 1910 a, p. 73), and the supposition that the water was in some degree salt, especially in the greater depths, has also been put forward. It is first by this means that one or two zoogeographical peculiarities can obtain their natural explanation, and, as ought to be shown by what has been said above, this opinion in no way stands in opposition to MUNTHE's and other scientists' interesting investigations of the animal- and vegetable life of the Ancylus-Lake. The writer refers to *Halicryptus spinulosus*, a worm and glacial relic in the Baltic — but found on one occasion in the estuary of the river Göta-älf —, which could hardly have survived the Ancylus-period of the Baltic inland sea, if its waters had been perfectly fresh. The same holds good for the worm *Antinoë Sarsi*, which, however, occurs, although but rarely, in the Western Ocean, and now possibly appears in the Baltic Sea as a secundo-relic (VON HOFSTEN 1913, p. 108).

In consequence of the conditions and the theoretical reasonings dealt with, and as within the relatively so well-known Baltic Sea only the Ancylus-transgression in this connection seems to be able to come into question, the writer considers that he is in *a position to put forward the supposition that the »Ancylus-Lake» was an inland sea standing in connection with the Ocean, although its surface-layers and its main mass consisted of fresh water, and that the transgression in question is to be ascribed to the great fini-glacial land-subsidence, instead of, as was formerly supposed, to a vast emptying-out and a rising of the water within a closed basin during the continuance of a lengthy upheaval of the land.*

The climatic testimony borne by the mollusc-fauna.

Investigators are unanimous as to the sensitiveness shown by molluscs to the varying temperature of the water in which they live, and to their great importance as indicators of climate.

One or two observanda, well-known although they be, may, however, first be touched upon.

To draw final conclusions from some few negative facts is to be condemned, for the fact that the immigration of a species demanding warm conditions did not occur before the last elevation of the land is, for example, no guarantee that it was first then that the climatic conditions had become suitable for its well-being. This is shown, to take one example among many, by the well-known fact that *Mya arenaria*, which is found in Europe from south-west France to the White Sea, did not immigrate to Scandinavia before the very last part of the upheaval that took place during the sero-post-glacial age.

From this results, too, that the present extension of various molluscs is not yet ended, and that the conditions of distribution are not always an adequate expression of the adaptability of the species to climatic conditions.

In addition to temperautre there exist other essential conditions for the well-being of the molluscs, such as the salt-percentage of the water, the bottom, vegetation, depth, currents, the open or protected situation of the locality, etc. By no means unimportant, too, is the competition for suitable localities.

It is, therefore, a matter of no little difficulty to satisfactorily explain the occurrence or non-occurrence of any certain species during a fixed age or in a certain shell-bed, and one is, perhaps, often too easily tempted to have recourse to climate to explain away difficulties.

For these reasons the writer wishes to discuss the question of climate mainly on the basis of the general composition of the fauna, the assistance of the special, warmth-demanding species as a starting-point coming only in the second place, and this is done all the more readily that, to a great extent, it is then possible to let the objective figures speak for themselves.

The averages of the specific and individual percentages of the a-, b-, and l-species in the shell-beds deposited during the primo-post-glacial regression are, considered separately:[1]

	a	b	l
Nyckleby	14	65	21
Mörhult I	5	75	20
Summinge	11	69	20
Lunnevik I	10	69	21

The averages of these means are:

a	b	l
10	*70*	*20*

On p. 254 a survey has been made of the averages of the specific and individual percentages of the corresponding forms in shell-beds occurring below post-glacial clays. Here follow the same mean-figures for the other shell-beds examined, dating from the time of the *primo-post-glacial maximum regression and the post-glacial transgression:*

[1] Being all too few to form an independent group, these shell-beds have otherwise been preliminarily brought together with those deposited during the post-glacial transgression.

	a	b	l
Löndal	11	54	35
Hvalö	9	51	40
Mörhult II	11	46	43
Smittmyren	5	59	36

The means of the per-cent averages for all these shell-beds are, therefore:

a	b	l
9	*48*	*43*

The same averages for shell beds deposited during the age of the *post-glacial maximum transgression* are:

	a	b	l
Medvik A	12	61	27
» B	5	73	22
Lunnevik II	11	57	32
Rössö	10	62	28
Hällan	14	61	25
Hälle I	4	62	34
Håfve	11	26	63
Stare	4	31	65
Sandbogen	11	50	39
Efvenås	16	60	24

The means of these per-cent averages are:

a	b	l
10	*54*	*36*

In addition to the figures from sero-post-glacial regressional shell-beds given on p. 255, there are also the following:

	a	b	l
Lund	7	39	54
Skälleröd	8	39	53
Holkedalskilen	5	27	68
Prästängen	8	41	51
Lejonkällan	6	26	68
Hälle II	8	36	56
Sydkoster	4	31	65
Grandalen	7	21	72
Svälte	8	48	44

	a	b	l
Kjellviken	9	51	40
Kebal	11	27	62
Bagggeröd	7	23	70
Mörhult II	5	30	65
Nordkoster	9	44	47
Nöddö	6	30	64
Karholmen	6	35	59
Brattskär	9	40	51

The means of the per-cent averages for all the *sero-post-glacial regressional shell-beds* are:

a	b	l
8	*35*	*57*

At present it is difficult, on the basis of the mollusc-fauna, to express any decided opinion as regards the climatic conditions existing on the west coast of Sweden during the late fini-glacial age, for, on the one hand, the colder forms no longer thrive, and a fairly large number of warm species have immigrated, although, on the other hand, these latter species do not obtain a real foothold for a long time forward. Consequently, the mollusc-fauna is relatively poor in species and exceedingly poor as regards individuals.

However, towards the close of the fini-glacial time, such species as *Tapes aureus* and *T. virgineus*, *Ostrea edulis*, *Lepton nitidum*, *Laevicardium norvegicum*, *Rissostomia membranacea*, and *Nassa reticulata* are immigrated (see p. 252).

Of these, in the present age, we find *Laevicardium norvegicum* and *Nassa reticulata* going as far north as Trondhjem fiord, while the remainder have their northern limits on the west coasts of Sweden and Norway.

From this facts it would, probably, be most natural to deduce for the late fini-glacial age a temperature comparable with that of the present time, the poverty of the mollusc individuals being, perhaps, best explainable by unfavourable conditions of bottom and vegetation and by the salt-percentage of the water.

The conditions existing during the primo-post-glacial age, too, are little known, but certain warmth-demanding species, such as *Anomia striata*, *Rissoa parva*, *Bittium reticulatum*, and *Odostomia cf. albella* immigrate, and appear immediately with fairly great frequency, even if the specific percentages of the l-forms, as a whole, continue to sometimes surpass the percentages of the individuals. The immigrant demanding most warmth is, perhaps, *Lasaea rubra*, which, in Scandinavia, at the present time, is only occasionally met with on the west coast of Norway. The great majority of the species that play any real rôle in the post-glacial shell-beds seem to be immigrated at the beginning of the transgression.

Climatic conditions become more and more favourable, and towards the close of the transgressional period there appear, among others, *Tapes decussatus* and *Psammobia vespertina*, molluscs which demand a higher temperature than that existing at present in the Skagerack, but which occur on the Norwegian west coast, which offers more favourable climatic conditions. The first-named, however, occurs even here only as a southern relic.

At the time of the post-glacial transgression-maximum, there probably occurred an alteration of climate to a lower temperature, for there hardly seems any other acceptable explanation of the more northern characteristics of the fauna in the shell-beds from that age — 36 % for the l-forms as compared with 43 % during the transgression.[1]

The fact is all the more remarkable, as, specially at that period, the Gulf Stream probably washed our west coast. The climatic conditions were, however, still very favourable, so that *Tapes decussatus* throve, and *Solecurtus antiquatus*, whose present northern limit lies at the British Isles, was able to immigrate.

[1] This circumstance *can*, of course, also be explained by the supposition of *two* post-glacial depressions of the land with an intervening elevation, but there is nothing else that speaks in favour of this theory.

But the climate once more quickly improved, until it became the most favourable enjoyed by Scandinavia in late-Quaternary times.

In order to more closely determine the period which may be considered the most favourable as regards climatic conditions, the composition of the fauna during the first half of the sero-post-glacial upheaval may be regarded as distinct from that belonging to the latter half. Within the two groups on p. 255, 265 the shell-beds are arranged in order of age, and even the Nötholmen and Sydkoster beds are taken as belonging to the former half of the regression. The means of the percent averages for the former half of the regression will then be:

a	b	l
8	37	55

while, for the latter half of the upheaval, they are:

a	b	l
7	34	59

Thus, according to the testimony borne by the shell-beds of Bohuslän the most favourable climatic period during post-glacial time occurred during the latter part of the sero-post-glacial land-upheaval, which, according to O. Frödin (1906, p. 33), came to a close during the latter half of the bronze-age, or during the years 1000—500 B. C. *Tapes decussatus* is also met in great numbers in shell-beds on very low levels, and *Solecurtus antiqatus* occurred towards the end of the emergence.

The question respecting the time for the most favourable climatic conditions during the post-glacial age has, on the bases of the time of immigration, etc., of the molluscs demanding warmer waters, already been discussed by Hägg (1910, 1913). From the observations made by Prof. De Geer and the writer there appeared in Bohuslän, however, some of the species on which he bases his opinion at a considerably earlier period than that he has adopted. For example, *Scrobicularia piperata* immigrated as early as during the fini-glacial regression; *Tapes decussatus*, *Lucinopsis undata*, and *Psammobia vespertina* appareed during the latter part of the post-glacial transgression and *Hinnites pusio* during the transgression maximum.

Although it is not possible to bring forward any evidence of this, from what has been already said it is probable that the most southern forms adduced by HÄGG but not met by me, *Donax vittatus* and *Lepton squamosum*, actually lived in our western seas during sero-post-glacial time. In any case, for these forms to have occurred, the climate must have been comparable with that now prevailing in the middle of the North Sea and on the west coast of Scotland.

Only the mollusc-fauna of our days bears witness to a later-occurring deterioration of climate to such an extent as, as is shown by what has already been said, certain southern forms are there wanting which, during a part of the post-glacial age, were found in our waters.

To sum up: *From an attained, approximately, 50 % of the post-glacial transgression up to the cessation of the last upheaval of land, the climatic conditions existing on the west coast of Sweden were more favourable than those at present prevailing, and were comparable with those now found on the coasts of northern England and of Scotland. At the time of the post-glacial transgression-maximum there occured a brief deterioration of climate, during which, however, Tapes decussatus and Solecurtus antiquatus throve. Then the climate again improved, and the climatic optimum was reached during the latter part of the sero-post-glacial upheaval.*

On characteristic species.

If a typical post-glacial shell-bed is compared with one of glacial age the difference is distincly observed.

The gradual alteration has become complete. While Balanidae and large-sized Saxicavae are the principal types that characterize the last named beds, masses of small southern Rissoids and mussels set their impress on the former. *Rissoa* *parva* and *Bittium reticulatum* especially, in consequence of their frequency, their omnipresence and the facility with which they can be defined, are excellent post-glacial leading-fossils.

In general, statistical analyses are necessary in order to determine the frequency and to discover the types which are typical. Thus, different forms have proved to characterize individual shell-beds but, taken on the whole, are not characteristic of groups of such beds. An establishment of niveaux and an age-division on these grounds cannot, consequently, come into question. To give an example: *Tapes decussatus* occurs with great frequency in some shell-beds, while it is entirely wanting in the greater number of beds deposited at the same time. It is, consequently, not characteristic of these shell-beds in general, and even if it can be regarded as distinctive of a part of the post-glacial age, this period, as based on finds which will always remain insufficient, cannot be definitively fixed.

Ostrea edulis, however, from its numerousness, give their character to low-lying sero-post-glacial shell-beds.

Like *Ostrea edulis*, many species show variation of frequency during post-glacial age, while many others occur equally numerously during the whole period. Such a species, for example, is *Rissoa interrupta*, which nowadays plays a very subordinate rôle compared with that it formerly possessed.

Bittium reticulatum appears with extraordinary frequency during the whole of the post-glacial age. It is specially numerous during the last regression, but I cannot, however, decide whether more so than at present.

Rissoa parva is from common to numerous during the transgression age, and appears in large numbers during the last upheaval. At present it seems to be relatively common, and plays no especial role.

Rissostomia membranacea occurs with from little to scarce frequency during the whole of the post-glacial age, while, at the present time, it occurs in vast numbers.

While *Mya arenaria* made its appearance somewhat before the cessation of the last upheaval (see p. 333), *Rissoa albella*[1], a species now common on our west coast, is a typical recent immigrant, which I have never met in uplifted layers.

In the list, p. 415, there have been placed the present-day occurrence of the sub-fossil molluscs, or their absence, on our west coast, but in other respects no comparison has been made between the sub-fossil and recent mollusc-fauna. This, too, is a task more properly belonging to our zoologists.

Although the fauna composing the shell-beds consists of distinctive shallow-water forms, there can be read, however, a certain distinction referable to the varying bathymetric conditions, not only from the variation of frequency of the individual species but also from the specific composition. Thus, the shell-bearing clays, representing the deepest water, contain as characteristic forms mainly Brachiopoda, *Pecten*- and *Anomia*-species, and *Ostrea edulis*.

Shell-beds from the primo-post-glacial regression and the post-glacial transgression.

1. Shell-beds below post-glacial clay.

Otterö.

4 *km* SSW of Gräbbestad, circa 8 and c. 5·3 *m* above sea-level, 1915.

In this locality there is an extraordinarily large deposit of shell-gravel of a thickness exceeding 6 *m* and filling at least the whole of the south-east part of the 100 *m* broad glen which traverses the island from NNW to SSW. The shell-bed slopes gentle towards the sea and the SSE. The hills bordering the valley rise somewhat steeply to a height of about 18 *m* above the sea, afterwards forming a level plateau, which occupies the greater part of the island.

[1] By the courtesy of Dr. NILS ODHNER I have had the opportunity of making use of SVEN LOVÉN's original specimens for the sake of comparison.

A specimen-series, A, 175 *m*, and a second specimen-series, B, at a distance of 125 *m* from the shore, were taken in sections where shell-gravel is marked on the geological map. In neither spot was the bottom of the deposit reached.

The uppermost specimen in the series A was taken immediately below the surface of the soil, about 7·7 *m* above the sea, and the highest in series B was taken about 5·2 *m* above sea-level. The stratification, which is fairly discernible, slopes at B at an angle of 10°, however, and that at A at a somewhat lesser angle, towards the SSE. If this slope is estimated at 8°, the lowest specimen at B lies about 3 *m* higher in the strata-series than the uppermost at A. The accompanying profile from B, fig. 3, shows this, and also that the shell-bed is covered by a clay, which in the specimen-line is 0·12 *m* thick, and which is itself covered by a shell-bearing littoral formation (see p. 315).

A.

Table p. 341.

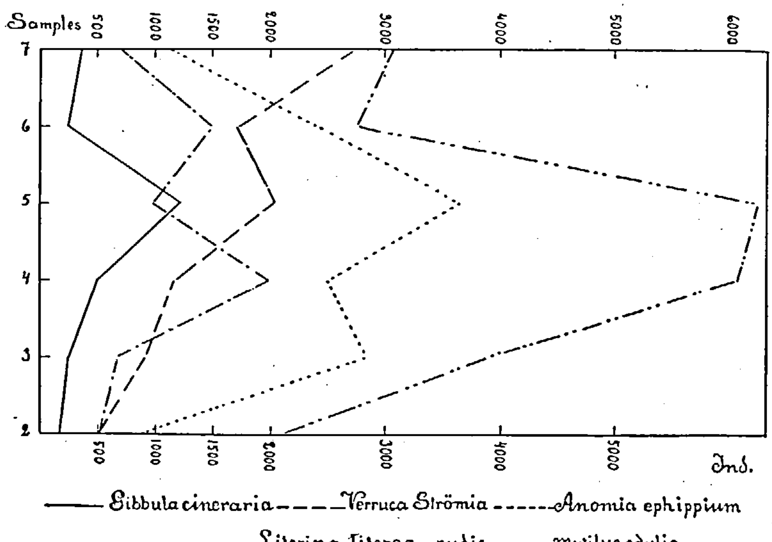


Fig. 1. Otterö A. Variation of frequency of the most typical species.

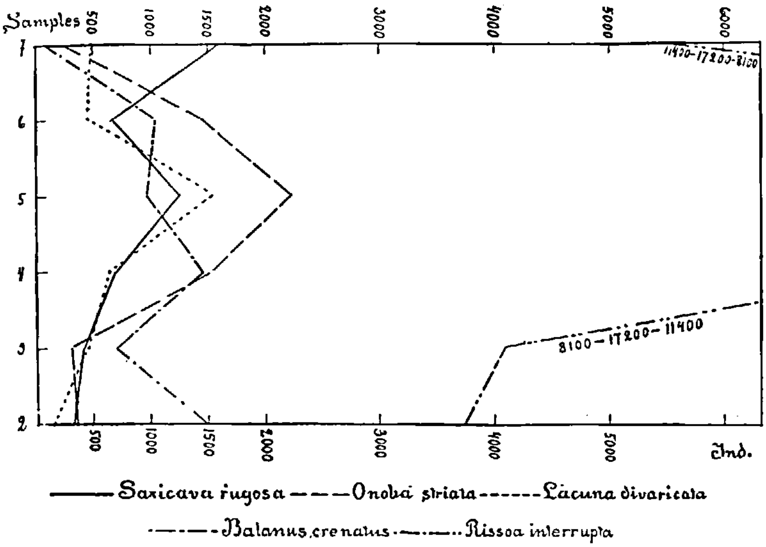


Fig. 2. Otterö A. Variation of frequency of the most typical species.

The composition of the fauna is:

ft	fr	prt	
10	26	19	species
18	47	35	% »
57 795	90 383	55 911	ind.
28	44	28	% »
23	46	31	average of percentages

a	b	l	
7	26	22	species
13	47	40	% »
23 650	120 901	54 989	ind.
12	61	27	% »
12	54	34	average of percentages

The lower samples are entirely free from stones; samples 5, 6, and 7 contain a couple of stones, and sample 7·7 a pretty large amount of stones, which last-named, however, are probably secondarily embedded. The percentage of clay is, all through, inconsiderable, being least in the lower samples. All samples, with the exception of the uppermost two, are extraordinarily rich in *Corallina officinalis*, a calcareous alga occurring in the littoral and the upper Laminarian zones.

It is evident that the molluscs lived principally on the level hill-plateau which extends on both sides of the glen in which they were, later on, deposited.

In figs 1 and 2, in accordance with the proposal of Prof. De Geer, there is shown graphically the variation of frequency in which the most important forms occur; the uppermost sample has not been included, as the stratification is probably secondarily altered. As is seen, all the shallow-water forms *Mytilus edulis*, *Litorina litorea-rudis*, *Lacuna divaricata*, *Rissoa interrupta*, *Gibbula cineraria*, and *Onoba striata* attain their maximum of frequency within the middle horizon of the bank, even if, in details, they present somewhat different curves. Such an unanimous testimony, and that of the *Mytilus*-curve, especially, ought undoubtedly to demonstrate that the horizon in question was deposited in the shallowest water, while the numerousness of the species mentioned speaks, on the whole, to the whole of that part of the shell-bed here in question being a shallow-water formation. The bed at B being superimposed by clay, indicating, undoubtedly, the post-glacial transgression maximum, the writer considers that *the horizon in question should be ascribed to the regression-maximum in early post-glacial times, which here, consequently, did not extend to the + 5 -m- level and certainly not to that of 8 m.*

B.

Table p. 348.

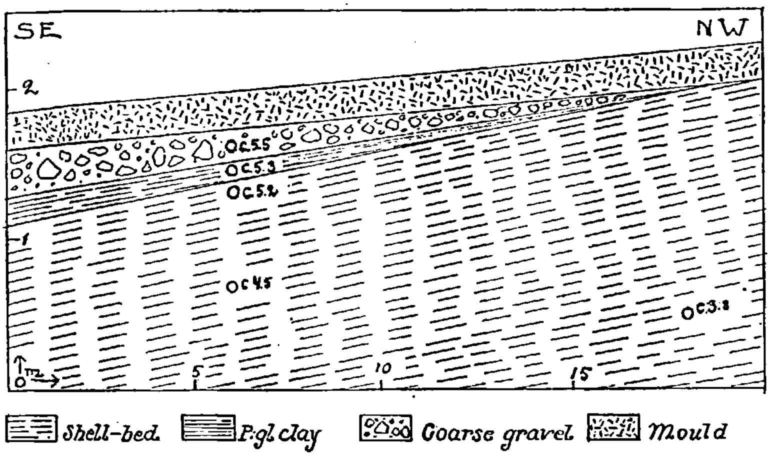


Fig. 3. Section at Otterö B.

The composition of the fauna is:

	ft	fr	prt	
{	11	22	19	species
	21	43	36	% »
{	8 463	17 541	50 894	ind.
	11	23	66	% »
	16	33	51	average of percentages

	a	b	1	
{	7	23	22	species
	13	44	43	% »
{	4 487	20 427	51 426	ind.
	6	27	67	% »
	10	35	55	average of percentages

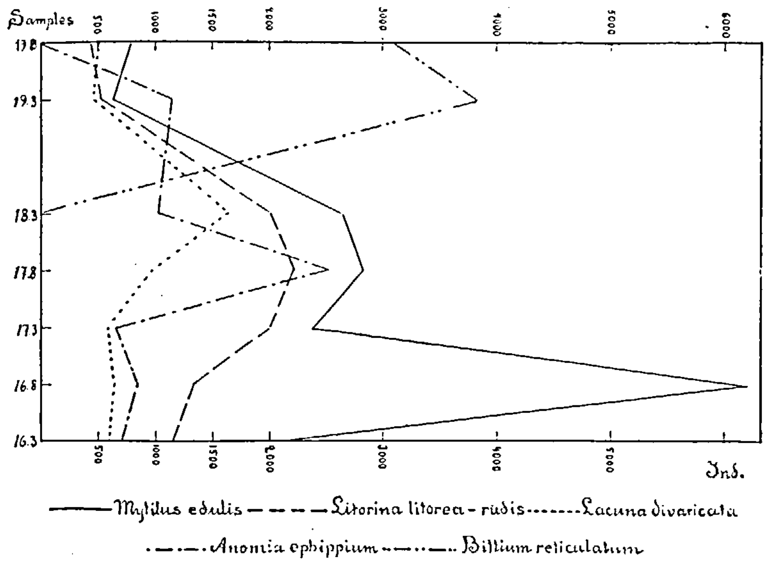
Sample 3·8 contains much stone, the two others but little. The proportion of clay increases upwards. In sample 3·8 *Corallina officinalis* is richly represented, while, in the others, it is, practically speaking, unrepresented. In sample 4·5 there occurs a pretty general individual minimum, which is partly the result of the material being in a greatly crumbled condition. Difficult of explanation, too, is the frequency-maximum, in the uppermost sample, of *Litorina litorea-rudis*, *Lacuna divaricata*, *Rissoa parva*, *R. violacea*, etc. Here, *Mytilus edulis* falls to a mimimum, and, from the percentage of clay, as well as from the conditions of bedding it is evident, too, that deposition occurred during a sinking of the land level. As was mentioned, however, it is highly probable that the molluscs lived, for the most part, on the hill-plateau, which is about 18 *m* high. Here the water was shallow for a long time, and the molluscs could, very probably, in consequence of improved conditions of vegetation and temperature, increase in frequency, in spite of the gradually increasing depth. On regarding all the attendant conditions as a whole, the writer is inclined to place the formation of this part of the shell-bed in the middle of the post-glacial subsidence and the time immediately after.

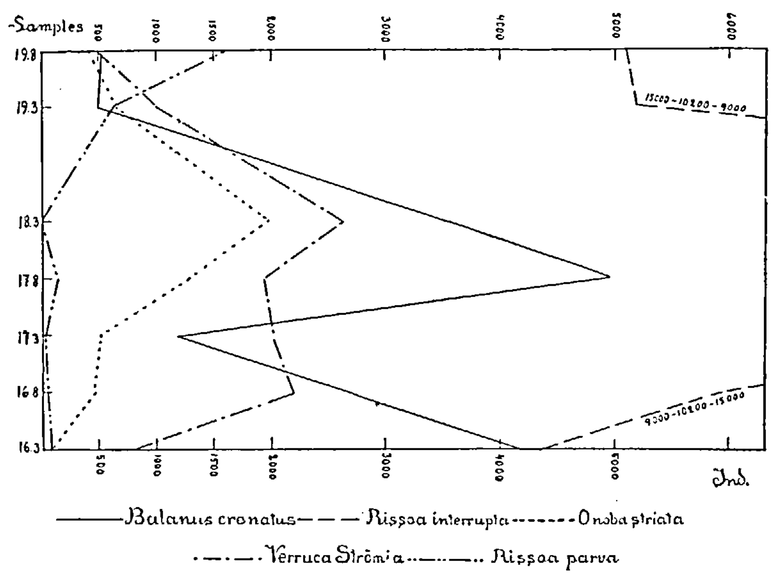
Fjällbacka.

Table p. 341.

0·8 *km* SSE of the church, at the upper part of *l* in Fjäl*l*backa (the geological map-section »Fjällbacka»), c. 20 *m* above the sea, 1915.

The shell-bed occurs in a glen running from N to S. The ground slopes about 10° towards the E. Towards the W there lies at a distance of 50 *m* a hill, which rises with some terrasses to a height of about 38 *m* above the sea. The thickness of the shell-bed is more than 4 *m*; the underlying strata were not reached. The pure shell-gravel is covered by a clay, 0·4 *m* thick, the under part of which is shell-bearing, and in which the uppermost sample was taken.





Figs. 4 and 5. Fjällbacka. Variation of frequency of the most typical species.

The composition of the fauna is:

	ft	fr	prt	
{	11	32	22	species
	17	49	34	% »
{	65 085	78 499	20 714	ind.
	40	48	12	% »
	28	49	23	average of percentages

	a	b	l	
{	7	29	29	species
	10	45	45	% »
{	8 237	133 745	21 395	ind.
	5	82	13	% »
	8	63	29	average of percentages

The lowest sample contains rather many stones, the other samples some amount. The percentage of clay, all the way through, is fairly great, and is largest in the lowest samples. Sample 19·3 contains pretty much *Corallina officinalis.*

The entire shell-bed is a distinctively shallow-water formation. The proportion of stones in sample 16·3 and the extraordinary frequency of *Mytilus edulis* in sample 16·8, in which the relative scarcity of the other shallow-water forms (see the diagrams) has perhaps its principal cause, should show that this horizon was propably deposited in the shallowest water, or when the surface of the water stood only inconsiderably higher. As the clay superimposed on the bed undoubtedly distinguishes the post-glacial transgression maximum, *the shore-line was, consequently, displaced during the primo-post-glacial regression so far at least, or to about the + 17-m-level.* As has already been mentioned, the base was not reached; an examination of the lowest part of the shell-bed is, of course, greatly to be desired, as here there may exist a possibility of more exactly determining the amount of the regression.

Rössö-Långö.

9 *km* S of Strömstad, on the northern part of Rössö-Långö, 8 (9) *m* above the sea, G. DE GEER 21/8 1890[1]). Cfr. DE GEER 1910, p. 1184.

The shell-bed showed according to Prof. DE GEER the following section:

uppermost, stony shell-gravel	0·5—1·0 *m*
clay	0·2
post-glacial shell-gravel	2·8 +

Prof. DE GEER took three series of samples:

The surface of the shell-bed 9 *m* above the sea

A	B	C				
—	0·5	—	*m* above	the clay,	8·7 *m*	above the sea
0·1	0·1	—	»	»	8·3	»
0·1	—	—	*m* below	»	7·9	»
—	—	0·2	»	»	7·8	»
1·0	—	1·0	»	»	7·0	»

In this place the writer intends to speak of the lower shell-deposit alone, i. e., of the two lower samples at A, and series C (cfr. p. 313).

A.

Table p. 344.

In a pickings, there have been found the following species not met with in the samples:

Tapes aureus . . . . 1 1/2 ind.
Psammobia vespertina . . 1 1/2
Emarginula fissura . . . 1

The composition of the fauna is:

	ft	fr	prt	
{	9	20	19	species
	19	42	39 %	»

1) Most shell-beds are mentioned in Prof. DE GEER's geological diary of the map-section »Strömstad» in the archives of the Geological Survey of Sweden.

	ft	fr	prt	
[1]	3 195	3 292	16 085	ind.
	14	15	71	% »
	17	28	55	average of percentages
	a	b	l	
	7	15	26	species
	15	31	54	% »
[1]	661	5 738	16 105	ind.
	3	25	72	% »
	9	28	63	average of percentages

C.

Table p. 344.

The composition of the fauna is:

ft	fr	prt	
9	17	14	species
22	43	35	% »
3 530	3 513	18 331	ind.
14	14	72	% »
18	28	54	average of percentages
a	b	l	
6	14	20	species
15	35	50	% »
738	5 593	19 233	ind.
3	22	75	% »
9	28	63	average of percentages

L- and prt-forms are unusually richly represented. Of special interest is the occurrence of *Psammobia vespertina*.

The shell-gravel is fairly rich in stones. The percentage of clay increases upwards. *Mytilus edulis* and *Litorina litorea-rudis* are, practically speaking, absent, while *Mytilus modiolus* occurs. From the great frequency of *Bittium reticulatum* and *Rissoa parva*, however, as well as from the presence of *Lacuna*

[1]) Here, as in the following, calculated exclusively from the statistical analyses, and not from the pickings too.

divaricata we are able to ascertain that the bed was deposited in water which was, at most, some twenty *m* deep. Taking into consideration the composition of the fauna and the presence of a superimposed clay, it is, consequently, probable that the part of the shell-bed in question was formed some time before the attainment of the post-glacial transgression maximum.

Torseröd.

Table p. 344.

10 *km* N of Gräbbestad, 1 *km* SSW of Kragenäs sta., immediately above *r* in Torse*r*öd (the geological map-section »Fjällbacka»), cc. 0·5 (cc. 5·5) *m* above the sea, 1915.

At the foot of the plateau the sides of which rise perpendicularly to a height of about 25 *m* and which to the W forms the boundary of the glen at Torseröd, running in north-westerly direction, there occurs a considerable shell-deposit. It consists of a 4 *m* thick, upper shell-bank, lying above a bed of clay, which, in its uppermost part, is free from shells, but which, lower down, gradually passes into a pure post-glacial shell-gravel. In consequence of the presence of water, it was only possible to take one sample in the underlying bank, viz., at a depth of 0·8 *m* below the upper surface of the clay. The writer was able, however, to ascertain that the shell-gravel went at least 1·5 *m* deeper. It is the above-mentioned lower sample we shall now deal with (cfr. p. 307).

The composition of the fauna is:

ft	fr	prt	
7	21	11	species
18	54	28	% »
6 110	6 410	4 850	ind.
35	37	28	% »
26	45	28	average of percentages

	a	b	l	
{	3	20	16	species
	8	51	41	% »
{	980	11 625	4 705	ind.
	6	67	27	% »
	7	59	34	average of percentages

The under bed was apparently deposited during the post-glacial subsidence. When the water became sufficiently deep, clay began to be deposited. The sample analysed has a large percentage of clay, and is rather free from stones. The fact that *Mytilus edulis*, *Litorina litorea-rudis*, *Lacuna divaricata*, *Bittium reticulatum*, and *Rissoa interrupta* are among the forms most numerously represented, depends most certainly on their having lived on the ledges of the c. 25 *m* high rock-plateau as well as on the plateau itself, for it is probable that this horizon was deposited shortly before the maximum of the post-glacial transgression, or when the tract lay from 30 to 35 *m* lower than at present.

Fjälla.

Table p. 344.

15·5 *km* NNE of Strömstad, 3 *km* SSW of Svinesund, at the outlet of the Fjällatjärn, 31 *m* above the sea, G. De Geer $^{17}/_{8}$ 1893.

A shell-free clay covers at this place a clayey sand, mixed with gravel and rich in shells.

In addition to those species forming part of the analysis, I have found in a pickings made by Prof. De Geer:

Boreochiton ruber . .	$^{1}/_{6}$ ind.	(fr, a)	*Lunatia intermedia* . . .	2	(fr, l)
Pecten septemradiatus . .	+	(prt, b)	*Litorina litorea*	5	(ft, b)
Vola maxima	$^{1}/_{2}$	(prt, l)	» *rudis*	4	(ft, b)
Mytilus edulis	2	(ft, b)	*Hydrobia ulvae*	1	(fr, b)
Cardium edule	$^{1}/_{2}$	(fr, l)	*Rissostomia membranacea*	1	(fr, l)
Cyprina islandica	4	(fr, b)	*Turritella terebra* . . .	5	(prt, l)

Lucinopsis undata . . . . 5 (prt, l)
Lucina borealis . . . . . 5 (fr, b)
Cyamium minutum . . . 1/2 (prt, b)
Emarginula fissura . . . 6 (prt, l)
Clathurella linearis . . . 3 (fr, l)
Nassa reticulata . . . . 6 (fr, l)
» *incrassata* . . . . 2 (fr, b)
Utriculus umbilicatus . 1 (fr, l)

The composition of the fauna is:

ft	fr	prt	
11	19	16	species
24	41	35	% »
249	73	680	ind.
25	7	68	% »
25	24	51	average of percentages

a	b	l	
5	20	21	species
11	43	46	% »
69	558	368	ind.
7	56	37	% »
9	50	41	average of percentages

Remarkable is the almost complete absence of Rissoids.

The shell-bed was apparently deposited shortly before the maximum of the post-glacial transgression was reached.

N. Holt.

Table p. 344.

5 *km* N of Strömstad, 0·15 *km* WSW of N. Holt, c. 32 *m* above the sea, G. De Geer and F. Andersson 1/8 1890.

The shell-bed occurs on the north side of a narrow valley. It is more than 0·5 *m* in thickness, and is superimposed by a clay, 0·3 *m* thick.

The composition of the fauna is:

ft	fr	prt	
8	23	12	species
19	53	28	% »
6 105	10 129	11 815	ind.
22	36	42	% »
20	45	35	average of percentages

	a	b	l	
{	4	23	16	species
	9	53	38	% »
{	2 565	13 883	11 081	ind.
	9	51	40	% »
	9	52	39	average of percentages

The shell-gravel is clayey and contains some few stones.

The shell-bed was apparently deposited immediately before the attainment of the maximum of the post-glacial transgression.

2. Shell-beds not superimposed by clay.

Nyckleby.

Table p. 340.

6 *km* S of Strömstad, 0·2 *km* SSE of Nyckleby, c. 23 *m* above the sea, G. De Geer $^{16}/_{8}$ 1890.

The shell-bed is 1·4 *m* in thickness. It is superimposed by mould 0·2 *m* in depth and, downwards, passes into sand. Samples at 0·4 and 0·7 *m* depth.

The composition of the fauna is:

	ft	fr	prt	
{	8	17	12	species
	22	46	32	% »
{	15 030	12 858	3 056	ind.
	49	41	10	% »
	35	44	21	average of percentages

	a	b	l	
{	7	18	12	species
	19	46	32	% »
{	2 674	25 636	3 182	ind.
	8	82	10	% »
	14	65	21	average of percentages

The shell-gravel is entirely free from stones. *Mytilus edulis* and *Litorina litorea-rudis* are very sparsely represented, but various other shallow-water forms occur richly and increase in frequency upwards. The mould that covers the bed is probably derived from a post-glacial clay. These circumstances, together with the sparseness with which the southern forms occur, both as species and, especially, as individuals, make it probable that the shell-bed was deposited during the primo-post-glacial regression.

Mörhult I.

Table p. 340.

Some hundred *m* N of Fjällbacka church, c. 12·5 *m* above the sea, 1915.

The shell-bed lies 65 *m* from the sea, in a glen sloping in a westerly direction towards the shore at an angle of 5—10°. To the SE there rises at a distance of 75 *m* a perpendicular hill 25—30 *m* above the level of the other ground. 50 *m* to the eastward there gradually rises another hill, which, at a distance of 75 *m*, attains a height of 20 *m* above the other ground.

In this bed, which has been partly removed by digging, there exists a perpendicular section, almost 5 *m* deep. In the immediate neighbourhood and on each side there are sandpits, so that, consequently, the bed is of inconsiderable extent. It rests on moraine, and the lowest sample was taken from between the moraine boulders. The shell-gravel continues unaltered 0·4 *m* above the sample-series, and is covered by a bed of sandy mould with stones.

The composition of the fauna is:

ft	fr	prt	
8	24	15	species
17	51	32	% »
24 975	18 790	2 953	ind.
54	40	6	% »
35	46	19	average of percentages

	a	b	l	
{	4	27	16	species
{	9	57	34	% »
{	606	42 396	2 740	ind.
{	1	93	6	% »
	5	75	20	average of percentages

The percentage of stone is, at the bottom, very great, which gives rise to a general minimum of frequency, but it decreases upwards.

No real importance should be attached to the circumstance that some shallow-water forms attain a little noticeable maximum of frequency in the middle strata of the bed, while other forms do this in its upper part; as the shell-bed was certainly deposited when the level of the water stood some ten *m* above it, and the molluscs, to some extent at least, lived in the neighbouring higher parts, for the composition of the fauna points most decidedly to the deposition having taken place during the primo-post-glacial regression.

Summinge.

Table p. 340.

3 *km* S of Strömstad, Hvalö, 0·2 *km* E of Summinge, 11 *m* above the sea, G. De Geer $^{21}/_{7}$ 1890.

The shell-bed is some *m* thick and, downwards, passes into pure clay. One sample 1 *m* below the surface.

In a pickings the following species, not found in the statistical sample, have been determined:

Anomia striata	½ ind.	(prt, l)	*Antalis entalis*	1	(prt, b)
Astarte compressa	½	(ft, a)	*Siphonentalis lofotensis*	1	(prt, b)
» *elliptica*	+	(ft, a)	*Patella vulgata*	1	(fr, b)
Tapes virgineus	½	(fr, l)	*Emarginula fissura*	1	(prt, l)
Lucina borealis	½	(fr, b)	*Polytropa lapillus*	2	(fr, b)
Solen sp	+		*Balanus porcatus*	+	(ft, a)
Thracia villosiuscula	½	(fr, b)			

The composition of the fauna is:

ft	fr	prt	
11	20	14	species
24	45	31	% »
2 520	4 905	500	ind.
32	62	6	% »
28	53	19	average of percentages

a	b	l	
7	23	15	species
16	51	33	% »
455	6 845	600	ind.
6	87	7	% »
11	69	20	average of percentages

The shell-bed is fairly gravelly. *Rissoa interrupta*, *Verruca Strömia*, *Anomia ephippium*, and *Mytilus edulis* are most richly represented. The warmer forms occur in a relatively large number of species, but individually they are very poorly represented. The shell-bed, consequently, was probably deposited in water some ten *m* deep and during the latter part of the primo-post-glacial regression.

Lunnevik I.

Table p. 340.

12 *km* N of Strömstad, c. 17 *m* above the sea, G. DE GEER $^{19}/_{8}$ 1893.

One sample, 0·5 *m* below the ground.

The composition of the fauna is:

ft	fr	prt	
9	18	11	species
26	47	29	% »
17 115	8 682	2 580	ind.
60	31	9	% »
42	39	19	average of percentages

	a	b	l	
{	6	20	12	species
	16	53	31	% »
{	1 420	23 955	2 617	ind.
	5	86	9	% »
	10	69	20	average of percentages

The shell-gravel contains an inconsiderable number of stones. *Mytilus edulis* predominates, and *Verruca Strömia*, *Rissoa interrupta*, and *Anomia spp.* are very numerously represented. The bed, consequently, was deposited in very shallow water and, in all probability, during the primo-post-glacial regression, or at the regression-maximum.

Löndal.

Table p. 342.

3·5 *km* SSW of Fiskebäckskil, cc. 14 *m* above the sea, 1915. The shell-bearing deposit, which is encountered in a valley 175 *m* wide and running approximately in an E—W direction, is of considerable extent and has a thickness of more than 5 *m*. The substratum was not reached. Samples from depths of 0·5, 2·5 and 4·5 *m*. They were taken 35 *m* from the northern side of the hill which rises fairly perpendicularly to a plateau some 6—8 *m* above the level surface of the valley.

The composition of the fauna is:

	ft	fr	prt	
{	10	24	12	species
	23	52	26	% »
{	22 319	18 580	17 538	ind.
	38	32	30	% »
	30	42	28	average of percentages

	a	b	l	
{	7	20	19	species
	15	44	41	% »
{	3 876	36 545	16 301	ind.
	7	64	29	% »
	11	54	35	average of percentages

The shell-bed contains, especially in its upper half, very much gravel. The frequency of the shallow-water forms and the decrease upwards of *Mytilus edulis*, *Litorina litorea-rudis*, and *Lacuna divaricata* point to deposition at an inconsiderable but increasing depth. It is, too, probable that the molluscs, to a great degree, lived on the neighbouring rock-plateau. The maximum, in the middle levels, of *Rissoa parva*, *R. interrupta*, *Bittium reticulatum*, *Onoba striata*, etc., depends, partly, on the less crumbled character of the shell-gravel, and partly, apparently, on more favourable conditions of the bottom and the vegetation.

The richness of species and individuals of the ft-, fr-, and b-forms, as well as the above-mentioned variation of frequency of the shallow-water forms, speaks decidedly in favour of the bed having been deposited during the post-glacial transgression.

Hvalö.

Table p. 343.

3 *km* SSW of Strömstad, SW of Askvik, c. 6 *m* above the sea, G. De Geer 9/8 1895.

Samples at 1 and 3 *m* depth.

The composition of the fauna is:

ft	fr	prt	
9	20	18	species
19	43	38	% »
29 605	29 477	33 330	ind.
32	32	36	% »
26	37	37	average of percentages

a	b	l	
6	21	20	species
13	44	43	% »
5 469	51 195	33 440	ind.
6	57	37	% »
9	51	40	average of percentages

The shell-gravel is almost perfectly free from stones, and has probably been deposited at a depth of some ten *m* or in somewhat shallower water, and, to judge from the decrease upwards of the shallow-water forms and from the composition, during the post-glacial transgression.

The forms most numerously represented are, in the order given, *Verruca Strömia*, *Bittium reticulatum*, *Anomia spp.*, *Rissoa parva*, *R. interrupta*, and *Saxicava rugosa*.

Mörhult II.

Table p. 343.

0·7 *km* NNW of Fjällbacka church, 4·3 (4·6) *m* above the sea, 1915.

In the present shell-bed, which is situated 25 *m* from the shore and at the foot of a hill, which, 15 *m* E of the section, rises steeply to a height of 9 *m* above the sea and, at a distance of 50 *m*, to a height of 18—20 *m*, there was encountered the following profile:

		ground 4·6 *m* above the sea
uppermost,	coarse gravel	0·15 *m*
	Ostrea-gravel (sample 4·4)	0·2—0·4
	shell-bearing gravel (samples at 0·2 *m* depth and at the bottom)	1·0
	moraine	+

The sharp division between the two shell-bearing layers, the different aspect and the varying fauna show undoubtedly that the two layers are of essentially different ages. The *Ostrea*-gravel dates, probably, from the latter part of the last upheaval of the land, and will be treated of on p. 329. The lower shell-gravel, which is discussed here, was, on the other hand, as is seen by the composition of the fauna, certainly deposited during the post-glacial transgression, for, when discussing the time of deposition of the bank, no importance should be ascribed to the minimum of frequency that distinguishes the lower sample, this minimum depending essentially on the far greater percentages of stones and of clay. In addition, it is probable that the molluscs found in the bed have, in part, lived on the neighbouring rocky height, thereby considerably reducing their value as bathymetric indicators.

The composition of the fauna is:

ft	fr	prt	
12	18	6	species
33	50	17	% »
6 354	2 669	9 925	ind.
34	41	52	% »
33	32	40	average of percentages

a	b	l	
7	17	12	species
20	47	33	% »
584	8 285	9 986	ind.
3	44	53	% »
11	46	43	average of percentages

Smittmyren.

Table p. 344.

0·6 *km* ENE of Strömstad, 31·1 *m* above the sea, G. De Geer 5/8 1889.

Prof. De Geer measured the following profile:

uppermost, shell-gravel with ordinary *Mytilus*-frequency (sample)	0·3 *m*
» with great » »	0·2
coarse gravel	+

In some pickings the writer found in addition to those represented in the samples:

Pecten varius	+ ind.	(prt, l)	*Tapes decussatus*	5½	(prt, l)
Cardium edule	3	(fr, l)	*Lucina borealis*	4	(fr, b)
» *cf. exiguum*	1½	(fr, l)	*Patella vulgata*	3	(fr, l)
Laevicardium norvegicum	½	(fr, l)	*Rissostomia membranacea*	1	(fr, l)
Cyprina islandica	½	(fr, b)	*Lunatia intermedia*	3	(fr, l)
Tapes aureus	6½	(fr, l)	*Nassa incrassata*	1	(fr, l)
» *pullastra*	1½	(fr, l)	*Buccinum undatum*	2	(prt, b)

The composition of the fauna is:

	ft	fr	prt	
{	7	27	14	species
	15	55	30	% »
{	9 900	18 505	8 156	ind.
	27	51	22	% »
	21	53	26	average of percentages
	a	b	l	
{	3	22	23	species
	6	46	48	% »
{	1 340	27 080	8 820	ind.
	4	72	24	% »
	5	59	36	average of percentages

Of special interest is the occurrence of *Tapes decussatus*, this being the oldest known one in Bohuslän.

The samples contain some few stones and hardly any clay. Judging from the extraordinary frequency of *Mytilus edulis* in the lower part of the bank, the bed must certainly have been deposited during subsidence, or during the latter part of the post-glacial transgression.

Shell-beds from the post-glacial transgression maximum.

Medvik.

Table p. 345.

4·5 *km* N of Strömstad, 0·3 *km* SSW of Medvik, c. 32 *m* above the sea, G. De Geer $^{31}/_{7}$ 1890.

In this thick shell-bed Prof. De Geer took a sample, A, c. 26 *m* above the sea and, 15 *m* from here, a series, B, with samples from a depth of 1 and 3 *m*, or at a height of c. 31 and c. 29 *m*.

A.

The composition of the fauna is:

	ft	fr	prt	
{	8	22	8	species
	21	58	21	% »
{	9 419	7 263	2 643	ind.
	49	37	14	% »
	35	48	17	average of percentages

	a	b	l	
{	6	17	15	species
	16	45	39	% »
{	1 714	14 989	2 679	ind.
	9	77	14	% »
	12	61	27	average of percentages

The shell-gravel is but inconsiderably stony. The shallow-water forms and *Mytilus edulis*, *Litorina litorea-rudis*, *Rissoa interrupta*, and *R. parva*, especially, occur with very great frequency.

B.

The composition of the fauna is:

	ft	fr	prt	ptm	
{	7	19	7	1	species
	20	56	21	3	% »
{	12 713	7 248	1 760	30	ind.
	59	33	8	0	% »
	40	44	14	2	average of percentages

	a	b	l	
{	3	19	12	species
	9	56	35	% »
{	194	19 432	1 760	ind.
	1	91	8	% »
	5	73	22	average of percentages

The shell-gravel is fairly stony.

The shallow-water forms predominate, but do not attain the same frequency as in A. They are about equally numerously represented in both samples. In the immediate neighbourhood there rises a hill to the height of about 35 *m* above the sea. It is probable that the molluscs lived partly on this eminence.

In consequence of the cold character of the bed, it was only with hesitation that the writer referred it to this group, for it is not altogether unlikely that it was deposited as early as during the regression in primo-post-glacial times;

perhaps, however, the fauna is too warm for such a supposition. However, the determination of the age has been essentially based on the variation of frequency of the shallow-water forms, according to which the lower part (A) of the bed was deposited in shallower water than the upper part (B). Thus, the deposition possibly occurred during the last part of the transgression and the epoch of greatest depression.

Lunnevik II.

Table p. 345.

12 *km* N of Strömstad, c. 35 *m* above the sea, G. De Geer 19/8 1893.

De Geer (1910, p. 1179) has communicated the following section of the shell-bed:

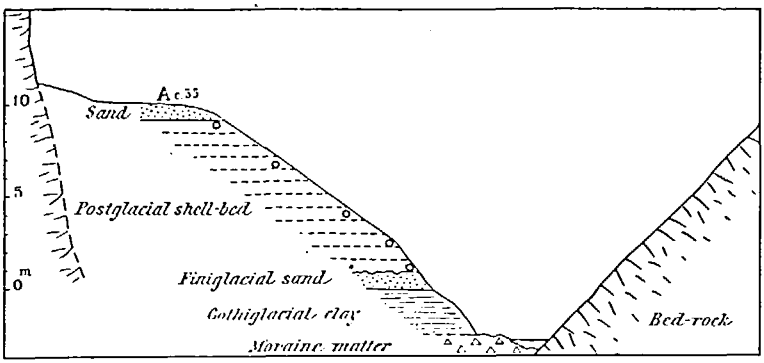


Fig. 6. Section at Lunnevik II.

The uppermost sample was taken 15 *m* south of the others, all of which are from one and the same profile.

In a pickings there have been found the following forms, not discovered in the samples:

Hinnites pusio	1/2 ind.	(ptm, l)	*Solen ensis*	+	(fr, b)
Pecten tigrinus	1/2	(prt, b)	*Antalis entalis*	4	(prt, b)
Cardium echinatum	1	(fr, l)	*Emarginula fissura*	2	(prt, l)
Laevicardium norvegicum	1 1/2	(fr, l)	*Capulus hungaricus*	2	(prt, l)
Cyprina islandica	1/2	(fr, b)	*Clathurella linearis*	2	(fr, l)
Tapes pullastra	2	(fr, b)	*Cylichna sp.*	+	
Macoma calcaria	1 1/2	(ft, a)	*Balanus porcatus*	1	(ft, a)

The composition of the fauna is:

	ft	fr	prt	ptm	
{	13	34	23	7	species
	17	44	30	9	% ›
{	58 369	24 116	21 041	63	ind.
	57	23	20	0	% ›
	36	34	25	5	average of percentages

	a	b	l	
{	9	34	34	species
	12	44	44	% ›
{	10 516	69 341	20 851	ind.
	10	69	21	% ›
	11	57	32	average of percentages

In the gothi-glacial clay lying immediately under the bank there have been found:

Pecten islandicus	3 ind.	*Mya truncata*	2
Astarte elliptica	1/2	*Sipho sp.*	+
Saxicava rugosa	1	*Balanus porcatus*	1
Macoma calcaria	1/2		

The lowest sample is fairly sandy, and this is probably the chief cause of the pervading minimum of frequency existing here. The shallow-water forms are all numerously represented in the bed, but, for the most part, attain their not very prominent maxima in different horizons, this being, probably, the result of varying conditions of the bottom, the vegetation, etc. The material 2 < *mm* of *Mytilus edulis* shows in the various samples, from below upwards, the following weight-figures in *gr* 8·7, 17, 21·6 24·7 and 13·2; the maximum of frequency occurs in the uppermost sample. It is, consequently, probable that the molluscs have, to an essential degree, lived on the neighbouring hill, and that the bed was deposited during the period immediately preceding, during, and immediately after the post-glacial transgression maximum.

Rössö.

Table p. 346.

10 *km* S of Strömstad, Rössö, N 6° E of the triangle-point, c. 24 *m* above the sea, G. De Geer 5/7 1894.

In the same pit Prof. De Geer took two sample-series at a distance of 6 *m* from each other:

c. 23·6 *m* above the sea and 0·5 *m* below the surface
c. 23·3 » 0·8 »
c. 22·2 » 1·8 »

c. 21·7 *m* above the sea and 2·3 *m* below the surface
c. 21·0 » 3·0 »
here below >0·9 *m* shell-gravel.

In a pickings, chiefly from the uppermost part of the bed, the writer has found the following species, not represented in the statistical samples:

Pecten varius	1 ind.	(prt, l)	*Macoma baltica*	1/2	(fr, b)
» *septemradiatus* . .	1/2	(prt, b)	*Antalis entalis*	1	(prt, b)
Laevicardium norvegicum	1	(fr, l)	*Lepeta caeca*	4	(ft, a)
Astarte elliptica	1	(ft, a)	*Aporrhais pes pelecani* .	1	(fr, l)
Lucina borealis	2 1/2	(fr, b)	*Buccinum undatum* . .	1	(prt, b)

In the same pickings there occur 19 individuals of *Tapes decussatus* and 7 of *T. aureus*, which, consequently, characterize the upper part of the bank.

The composition of the fauna is:

ft	fr	prt	ptm	
15	36	25	4	species
19	45	31	5	% »
65 233	48 099	20 619	3	ind.
49	36	15	—	% »
34	40	43	3	average of percentages

a	b	l	
12	36	32	species
15	45	40	% »
6 620	107 154	20 471	ind.
5	80	15	% »
10	62	28	average of percentages

From 22·5 to 23·5 *m* above the sea there occur in the shell-bank large masses of *Corallina officinalis.*

The frequency decreasing upwards of the most typical shallow-water forms *Mytilus edulis, Litorina litorea-rudis, Lacuna divaricata*, etc., in the lower part of the shell-bed and the frequency, increasing in the same direction of the same species in its upper part clearly show that the deposition occurred during subsidence and a subsequent upheaval, or during the time shortly before, during, and shortly after the post-glacial transgression maximum.

Hällan.

Table p. 346.

3 *km* NNW of Strömstad, 0·4 *km* NE of Hällan, c. 36·5 *m* above the sea, G. De Geer 29/7 1890.

In a pickings occur the following species, not found in the statistical sample:

Cardium cf. exigium	4 ind.	(fr, l)	*Polytropa lapillus*	2	(fr, b)
Astarte compressa	1	(ft, a)	*Balanus porcatus*	+	(ft, a)
Lepeta caeca	1	(ft, a)	*Echinocyamus pusillus*	2	
Lacuna pallidula	2	(prt, b)			

The composition of the fauna is:

ft	fr	prt	
10	16	8	species
29	47	24	% »
2 996	3 171	1 531	ind.
39	41	20	% »
34	44	22	average of percentages

a	b	l	
7	17	10	species
21	50	29	% »
596	5 521	1 581	ind.
8	72	20	% »
14	61	25	average of percentages

The shell-bank can be characterized as shell-bearing sand. The forms most numerously represented are *Rissoa interrupta*, *Verruca Strömia*, and *Bittium reticulatum*, and the bed gives the impression of having been deposited in water 5—10 *m* deep, or during the greatest post-glacial subsidence.

Hälle I.

Table p. 346.

6 *km* NNE of Strömstad, 0·4 *km* N of Hälle, 0·5 *km* W of Kilarna, c. 39 *m* above the sea, G. DE GEER 3/8 1890.

According to Prof. DE GEER there exists here a shell-bank, 0·3 *m* thick, on shell-free sand.

In pickings there have been determined the following forms not met in the samples:

Cardium edule	8 ind.	(fr, l)	*Macoma baltica*	1/2	(fr, b)
Lucina borealis	1	(fr, b)	*Patella vulgata*	1	(fr, b)
Mactra elliptica	1/2	(prt, b)	*Aporrhais pes pelecani*	1	(fr, l)

Tapes decussatus is in the pickings represented by 11 specimens.

The composition of the fauna is:

ft	fr	prt	
7	21	11	species
18	54	28	% »
9 360	2 731	3 714	ind.
59	17	24	% »
39	35	26	average of percentages

a	b	l	
2	20	17	species
5	51	44	% »
380	11 371	3 884	ind.
2	73	28	% »
4	62	34	average af percentages

The fauna points to deposition in very shallow water. Probably, the shell-bed was formed at the time of the greatest post-glacial depression.

Nötholmen.

See p. 310. — The clay below the shell-bed at section A. In two analyses there have been found:

0.8 *m* below the surface of the clay:

Boreochiton ruber . .	$^2/_6$ ind.	(fr, a)	*Tectura virginea*	2	(fr, b)
Anomia ephippium . . .	2	(fr, b)	*Litorina obtusata* . . .	1	(fr, b)
» *aculeata*	1	(fr, b)	*Rissoa parva*	8	(prt, l)
Timoclea ovata	1	(prt, b)	» *interrupta* . . .	6	(fr, b)
Corbula gibba	$^1/_2$	(prt, l)	*Bittium reticulatum* . .	13	(prt, l)
Saxicava rugosa	1	(ft, a)	*Verruca Strömia*	5	(ft, b)

and 1·3 *m* below the surface of the clay:

Boreochiton ruber . .	$^1/_6$ ind.	(fr, a)	*Onoba striata*	1	(fr, b)
Anomia ephippium . . .	2	(fr, b)	*Rissoa parva*	7	(prt, l)
Portlandia cf. tenuis . .	1	(prt, b)	» *interrupta*	3	(fr, b)
Gibbula cineraria	1	(fr, b)	*Bittium reticulatum* . .	14	(prt, l)
Lacuna pallidula	1	(prt, b)	*Verruca Strömia*	5	(ft, b)
» *divaricata*	1	(ft, a)			

The composition of the fauna is:

ft	fr	prt	
3	8	6	species
18	47	35 %	»
a	b	l	
3	11	3	species
18	64	18 %	»

The clay is, obviously, of post-glacial age.

Tofterna.

B.

See p. 308. — From the clay underlying the shell-gravel at this place there are a couple of pickings and washings made by Prof. De Geer.

In a pickings 2·5 *m* above the sea, there have been determined:

Anomia ephippium	7 ind.	(fr, b)	*Abra sp.*	1/2	
» *aculeata*	1	(fr, b)	*Macoma calcaria*	1	(ft, a)
» *striata*	1/2	(prt, l)	*Saxicava rugosa*	2	(ft, a)
Ostrea edulis	2	(fr, l)	*Antalis entalis*	5	(prt, b)
Pecten islandicus	4	(ft, a)	*Tectura virginea*	1	(fr, b)
» *septemradiatus*	1	(prt, b)	*Lunatia intermedia*	1	(fr, l)
» *tigrinus*	1	(prt, b)	*Aporrhais pes pelecani*	1	(fr, l)
Nucula nucleus	1/2	(fr, l)	*Onoba striata*	1	(fr, b)
Cardium fasciatum	2	(prt, b)	*Waldheimia cranium*	23	(prt, a)
Astarte compressa	2	(ft, a)	*Verruca Strömia*	5	(ft, b)
» *elliptica*	2 1/2	(ft, a)			

The upper part of the clay is poor in shells. A sample contained in addition to a part of the above-mentioned species:

Axinus sp.	1 ind.		*Rissoa interrupta*	3	(fr, b)
Lepton nitidum	1/2	(fr, l)	*Nassa sp.*	1	
Gibbula sp.	1		*Clathurella linearis*	1	(fr, l)
Lacuna divaricata	1	(ft, a)			

In a third sample from a level not stated, there were determined, among others:

Tapes decussatus	1/2 ind.	(prt, l)
Emarginula fissura	1	(prt, l)

The composition of the fauna present in the three samples taken as a whole is:

ft	fr	prt	ptm	
7	11	7	1	species
27	42	27	4 %	»

a	b	l	
7	10	9	species
27	38	35 %	»

The clay lying under the shell-bed is, consequently, of post-glacial age.

Uppsikt.

Strömstad, the eastern boundary of the town, at the highway, G. De Geer 18/7 1889.

A pickings from a post-glacial clay:

Anomia aculeata	1 ind.	(fr, b)	*Timoclea ovata*	1/2	(prt, b)
» *striata*	1	(prt, l)	*Antalis entalis*	10	(prt, b)
Pecten septemradiatus	4	(prt, b)	*Lepeta caeca*	1	(ft, a)
» *tigrinus*	3	(prt, b)	*Litorina litorea*	1	(ft, b)
Nucula nucleus	1	(fr, l)	*Aporrhais pes pelecani*	6	(fr, l)
Cardium echinatum	1/2	(fr, l)	*Nassa incrassata*	1	(fr, b)
» *fasciatum*	1 1/2	(prt, b)	*Buccinum undatum*	1	(prt, b)
Cyprina islandica	+	(fr, b)	*Terebratulina sp.*	1	
Astarte compressa	3	(ft, a)	*Waldheimia cranium*	1/2	(prt, a)

The composition of the fauna is consequently:

ft	fr	prt	
3	6	8	species
18	35	47	% »
a	**b**	**l**	
3	10	4	species
18	59	23	% »

Although there is no statement with regard to the height, this shell-bearing clay has been included, as it can with certainty be ascribed to the post-glacial transgression maximum.

Håfve.

Table p. 412.

11 *km* ESE of Strömstad, E of Håfve, at the foot of the hill E of the brook, 22·3 *m* above the sea, G. De Geer 20/9 1890.

Prof. De Geer measured the following section:

uppermost, coarse gravel	c. 1·6 *m*
Ostrea-clay (sample)	0·3
sand	0·4
bed-rock	+

Of the *Ostrea*-clay a washing has been made of a quantity which, however, was neither measured nor weighed, and the figures showing individuals have reference to the number of individuals found.

The composition of the fauna is:

	ft	fr	prt	
{	8	12	7	species
	30	44	26	% »
{	25	62	351	ind.
	6	14	80	% »
	18	29	53	average of percentages
	a	b	l	
{	5	10	12	species
	18	37	45	% »
{	16	57	337	ind.
	4	14	82	% »
	11	26	63	average of percentages

The clay was certainly deposited during the post-glacial transgression maximum.

Stare.

Table p. 317.

3·5 *km* SSE of Strömstad, 0·4 *km* WSW of Stare, c. 32·6 *m* above the sea, G. De Geer 21/7 1890.

Samples at 1 and 1·6 *m* depth.

In a pickings occur the following species not found in the statistical samples:

Pecten varius	2 ind.	(prt, l)
Cardium edule	2	(fr, l)
Mya truncata	1/2	(ft, a)

In the same pickings *Tapes decussatus* is represented by 43 and *T. aureus* by 13 individuals, which species consequently characterize the shell-bed. Also important is the occurrence of *Solecurtus antiquatus*.

The composition of the fauna is:

	ft	fr	prt	ptm	
{	8	20	9	1	species
	21	53	23	3	% »
{	2 476	4 879	31 741	5	ind.
	6	13	80	—	% »
	14	32	52	2	average of percentages

	a	b	l	
{	3	18	17	species
	8	47	45	% »
{	341	5 648	32 981	ind.
	1	14	85	% »
	4	31	65	average of percentages

The lower sample contains some amount of stones, the upper one a fairly large quantity. The fauna points to deposition in very shallow water. There is nothing in the frequency of the species to show that there was any change of level during the deposition of the bed, but its age is, probably, to be ascribed to the post-glacial transgression maximum.

Sandbogen.

Table p. 347.

1·5 *km* NNE of Grafvarna, c. 36 *m* above the sea, 1915. Cfr. A. Lindström 1902, p. 76.

The shell-bank is situated in an inconsiderable hollow in a large, level rocky plateau. It is of fairly large extent and has a thickness of 2 *m*. The samples were taken from the lowest, middle and uppermost parts of the bank, which is covered by a layer of coarse gravel.

In addition to the forms found by the writer, Lindström in his list of species mentions:

Pecten varius (prt, l)
Cardium edule (fr, l)
Tapes pullastra (fr, b)
Lucina borealis (fr, b)
Corbula gibba (prt, l).
Mya truncata (ft, a)
Nacella pellucida (prt, b)
Lepeta caeca (ft, a)
Rissoa violacea (prt, l)

The composition of the fauna is:

	ft	fr	prt	
{	10	26	12	species
	21	51	25	% »
{	16 190	14 804	23 930	ind.
	29	27	44	% »
	25	41	34	average of percentages

	a	b	1	
{	7	24	17	species
	14	50	36	% »
{	3 852	28 373	23 906	ind.
	7	50	43	% »
	11	50	39	average of percentages

The shell-gravel is sandy and, in the lower part of the bank, contains a fairly large amount of stones. This is probably one of the causes of the minimum of frequency of the molluscs here. Everything points to the whole of the bank having been deposited in very shallow water, and the frequency maximum, in the upper parts of the bed, of *Mytilus edulis*, *Litorina litorea-rudis*, *Rissoa parva*, etc., shows that the land lay highest when it was formed. The time for the formation of the bed can, by means of the compositions and of the high situation, be with certainty fixed at the greatest post-glacial depression of the land and the very beginning of the last upheaval.

37 *m*, consequently, forms a minimum measure of the post-glacial transgression of the district.

Efvenås.

Table p. 347.

1·5 *km* E of Fiskebäckskil, SE of Efvenås. The uppermost sample, 28·5 *m* above the sea, of the sample-series B 29, taken, and in part examined, by Prof. De Geer (1910, p. 1173).

According to DE GEER the post-glacial shell-bank, at the height of 28·25 *m*, is superimposed, with a sharp limit, on a fini-glacial shell-bed.

According to DE GEER's (1910, table C) analysis of a sample from the lowest part of the bank, or 28·3 *m*, and from what is communicated here, the composition of the fauna is·

ft	fr	prt	ptm	
14	16	7	2	species
36	41	10	5	% »
9 172	723	1 420	—	ind.
81	6	13	—	% »
58	24	15	3	average of percentages

a	b	1	
11	14	14	species
28	36	36	% »
372	9 494	1 414	ind.
3	84	13	% »
16	60	24	average of percentages

Consequently, the bank contains especially in its lower part a very large percentage of cold forms, which, to an essential degree, are to be ascribed to the underlying fini-glacial bank and, in the present instance, occur secondarily. The presence of *Tapes decussatus*, *Bittium reticulatum*, *Rissoa parva*, etc., gives a full guarantee for the post-glacial age of the bank, and, as DE GEER points out, it has certainly been deposited in shallow water during the greatest post-glacial transgression or, more correctly, to judge by the increase upwards of *Mytilus edulis*, *Litorina litorea-rudis*, and others, immediately after the last upheaval of the land had begun.

30 *m*, consequently, forms the minimum figure of the post-glacial transgression of the district.

Shell-beds from the sero-post-glacial regression.

1. Shell-beds above post-glacial clay.

Kilarna.

Table p. 348.

6·5 *km* NNE of Strömstad, 0·3 *km* N of Kilarna, c. 22 *m* above the sea, G. De Geer 3/8 1890.

The shell-bed lies below a 30 *m* high precipice, is 1·4 *m* thick, and is superimposed on a muddy clay.

The composition of the fauna of the single sample is:

ft	fr	prt	
8	21	13	species
19	50	31	% ›
3 160	4 980	6 835	ind.
21	33	46	% ›
20	41	38	average of percentages

a	b	l	
4	19	19	species
10	45	45	% ›
1 255	6 553	6 926	ind.
9	44	47	% ›
9	45	46	average of percentages

The shell-gravel can be characterized as a clayey *Ostrea*-gravel. It is entirely free from stones. The shallow-water forms are numerously represented, but probably lived on the adjacent rock, as the percentage of clay points to relatively deep water.

The bed, consequently, appears to have been deposited during the first part of the sero-post-glacial regression.

Torseröd.

Table p. 349.

See p. 281. This refers to the shell-bed above the post-glacial clay. It is, as was mentioned, 4 *m* thick, and the lowest sample was taken 0·2 *m* above the clay, while the uppermost was taken at the surface cc. 5·5 *m* above sea-level.

The composition of the fauna is:

ft	fr	prt	ptm	spr	
9	26	19	1	1	species
16	47	33	2	2	% »
20 480	32 735	38 225	30	10	ind.
22	36	42	—	—	% »
19	41	38	1	1	average of percentages

a	b	l	
6	22	28	species
11	39	50	% »
3 735	49 231	39 745	ind.
4	53	43	% »
7	46	47	average of percentages

The shell-gravel is inconsiderably stony. The shallow-water molluscs are represented numerously to very numerously, and although they present a couple of different curves of frequency, these, however, may point to diminishing depth. This holds good especially for those for *Rissoa interrupta*, *Lacuna divaricata*, *Onoba striata*, and *Gibbula cineraria*. *Litorina litorea-rudis*, *Rissoa parva*, and *Bittium reticulatum* have their minimum in the middle of the bed; the two first-named have their maximum in its uppermost part and the last mentioned has its greatest frequency in its lower part. *Mytilus edulis* occurs in approximately the same number throughout the whole bed. The explanation of these conditions is, undoubtedly, that the molluscs, to a preponderant degree, lived above and on the sides of the 25 *m* high rock-plateau, and that the shell-bed was mainly deposited during the former and the middle part of the last upheaval, or considerably before the sea-surface passed its level; it has not been conditions of depth but other, various factors that, in the main, enabled the molluscs in question to thrive to a greater or less degree.

Tofterna.

3 *km* SW of Strömstad, the north side of Öddö, c. 14 *m* above sea-level.

Prof. DE GEER (1910, p. 1182 and pl. 45) has in »Quaternary Sea-bottoms» given a map and a description of the shell-bed, to which the reader is referred.

The shell-bearing layers are to be found in a regularly sloping strip of land between the sea-level and the steep hill-sides, which rise to a height of some 20 *m*.

Samples were taken at three different points (B see p. 299).

A.

Tables p. 350, 412.

8 *m* above the sea, G. DE GEER 26/8 1890.

Prof. DE GEER measured this section:

uppermost, sand	1 *m*
shell-gravel, towards the bottom very clayey	6·5
post-glacial clay, at the very bottom somewhat gravelly . . .	6·3
bed-rock	+

The shell-gravel's base, consequently, lies 0·5 *m* above the sea, and samples were taken 1·5, 2, 3, 4, 5, 6 and 7 *m* above the sea.

Sample 1·5 consists of sandy shell-bearing clay, of which there was washed a little more than 1 *kg*. There was obtained 65 *gr* shell-gravel of the coarseness 2 < *mm*, and 40 *gr* 1—2 *mm* in size. The result of the analysis is given in the table p. 412.

The composition of the fauna is:

	ft	fr	prt	ptm	spr	
{	15	31	30	5	12	species
	16	34	32	5	13	% »
{	78 947	238 152	71 165	29	97	ind.
	20	62	18	—	—	% »
	18	47	25	3	7	average of percentages

	a	b	l	
{	16	39	38	species
	17	42	41	% »
{	16 447	299 037	73 275	ind.
	4	77	19	% »
	11	59	30	average of percentages

The shallow-water forms are numerously, to very numerously, represented. They have, undoubtedly, lived above the neighbouring rock-plateau, and present greatly varying curves of frequency, giving, consequently, no information as to changes of level during the formation of the bed. Since, as is shown on p. 300, the underlying clay is post-glacial, the deposition took place, however, during the last regression.

c.

Table p. 350.

S of the brook, 8·5 *m* above the sea, G. De Geer 11/9 1890. Only 1 sample, 1 *m* below the ground and 7·5 *m* above the sea.

The composition of the fauna is:

	ft	fr	prt	
{	8	15	11	species
	24	44	32	% »
{	2 830	3 330	11 825	ind.
	16	18	66	% »
	20	31	49	average of percentages

a	b	l	
3	17	14	species
9	50	41	% »
1 033	5 120	11 660	ind.
6	29	65	% »
8	39	53	average of percentages

The sample is probably from the same or a somewhat higher horizon than sample 7 in series A. The shallow-water forms are relatively numerous. Some few, such as *Rissoa interrupta*, attain higher figures than are reached in sample 7 in A, but others — *Litorina litorea-rudis*, *Lacuna divaricata*, and *Bittium reticulatum* — have lower ones.

Nötholmen.

0·5 *km* WNW of Strömstad, 14 *m* above the sea.

In »Quaternary Sea-bottoms», p. 1179 and pl. 44, Prof. De Geer has given a map, profile (at A) and a detailed description of the shell-bed, to which the reader is referred.

The shell-bed, which is one of considerable dimensions, extends from sea-level up to a height of 14 *m*, and lies at the foot of a steep rock-plateau, which rises to a height of more than 20 *m*.

There are two series of samples, A and B, in hand.

A.

Table p. 351.

5 *m* above the sea (A 5 on the map), G. De Geer 26/8 1890. The section is, briefly, as follows:

uppermost, coarse gravel with boulders up to more than 1 *m* in size	1·2 *m*
shell-bed with a layer of fine gravel (between samples 1 and 2) . .	4
post-glacial clay	2
bed-rock	+

The base of the shell-bed lies on a level with the sea, and samples were taken 0·5, 1·5, 2·5, and 3·5 *m* above the sea.

In a couple of pickings, one of which is dated 6/8 1895, there occur the following forms, which are not represented in the statistical samples:

Pecten septemradiatus	1/2 ind. (prt, b)	*Mactra subtruncata*	1/2 (prt, l)
		Psammobia vespertina	1 1/2 (prt, l)
Leda pernula	1 (ft, a)	*Solecurtus antiquatus*	1 1/2 (ptm, l)
» *minuta*	1/2 (ft, a)	*Thracia villosiuscula*	1 (fr, b)
Portlandia arctica	2 1/2 (ft, a)	*Corbula gibba*	1 1/2 (prt, l)
Arca glacialis	3 (ft, a)	*Antalis entalis*	4 (prt, b)
Cardium edule	1 1/2 (fr, l)	*Patella vulgata*	4 (fr, b)
Isocardia cor	1/2 (spr, l)	*Lepeta caeca*	7 (ft, a)
Cyprina islandica	1 (fr, b)	*Lunatia Montagui*	2 (spr, b)
Tapes pullastra	1/2 (fr, b)	*Aporrhais pes pelecani*	1 (fr, b)
Lucinopsis undata	1 (prt, l)	*Neptunea sp.*	1
Axinus flexuosus	1 (prt, b)	*Balanus Hameri*	+ (ft, a)

Portlandia arctica, *Arca glacialis*, *Balanus Hameri*, and several individuals of *Saxicava rugosa* occur, of course, secondarily. This is, possibly, also the case with others, such as *Leda pernula* and *L. minuta*.

The composition of the fauna, consequently, is — redeposited forms being neglected:

ft	fr	prt	ptm	spr	
13	31	23	3	5	species
17	41	31	4	7	% »
25 621	35 680	100 630	10	136	ind.
16	22	62	—	—	% »
17	32	46	2	3	average of percentages

a	b	l	
8	36	31	species
11	48	41	% »
8 139	49 825	73 482	ind.
6	38	56	% »
8	43	49	average of percentages

In the section, De Geer (1910) has noted the underlying clay as late-glacial and, on p. 1182, has expressed the opinion that the bed was deposited during the post-glacial transgression, suppositions which are contradicted, however, by one or two analyses of the fauna of the clay, which give evidence of its post-glacial age (see p. 299).

The molluscs which compose the bed have probably mainly lived above the 20 *m* high rock-plateau at the foot of which they are deposited.

The shallow-water forms are richly represented. As is usually the case in beds deposited under similar conditions, they present greatly varying curves of frequency. In this case, *Mytilus edulis* and *Litorina litorea-rudis* keep company, while *Lacuna divaricata*, *Onoba striata*, *Rissoa parva*, and *R. interrupta* have curves which deviate very considerably from those of the former two. The chief cause of this is probably to be found in alterations in the conditions of the bottom and the vegetation.

The underlying post-glacial clay shows, as was mentioned, that the bed was deposited during the last regression; the fine gravel-layer near its base has probably been deposited fortuitously. The time of the deposition may, probably, be put at and after 50 % of the upheaval.

B.

Table p. 351.

100 *m* S of the preceding sample-series (A 5) or in the rectangle in Prof. De Geer's map (1910, pl. 44), 8 *m* above the sea, G. De Geer 14/8 1893.

The shell-bed, which is covered by a 0·3 *m* thick bed of earth, is here about 1·3 *m* thick and becomes fairly stony downwards. The samples were taken 0·1, 0·3 and 1·1 *m* below the surface of the shell-gravel.

In a couple of pickings have been determined the following species, not found in the statistical analyses:

Cardium edule	1/2 ind.	(fr, l)
Laevicardium norvegicum	2	(fr, l)
Tapes virgineus	1	(fr, l)
Psammobia vespertina	6	(prt, l)
Patella vulgata	1	(fr, b)
Neptunea despecta	1	(ft, a)

The composition of the fauna is:

ft	fr	prt	spr	
12	30	13	1	species
22	53	23	2	% »
17 465	8 740	84 860	10	ind.
16	8	76	—	% »
18	31	50	1	average of percentages

a	b		
8	24	24	species
14	43	43	% »
3 639	22 435	85 551	ind.
3	20	77	% »
9	31	60	average of percentages

Mytilus edulis is exceedingly rare, but the other shallow-water forms are relatively, to very richly, represented. On the whole they all increase in number upwards, and the curves of frequency of the species are, in many cases, very unlike those in A. The cause lies, perhaps, in the fact that the present series corresponds only to a part of that in A, for that they were deposited simultaneously is, the writer thinks, beyond all doubt.

Rössö-Långö.

See p. 279.

This refers to the part of the shell-bed which is superimposed on the post-glacial clay, or the uppermost sample in A and the two samples from B.

A.

Table p. 351.

The composition of the fauna is:

ft	fr	prt	
7	8	8	species
30	35	35	% »
1 240	543	12 448	ind.
9	4	87	% »
20	19	61	average of percentages

a	b	l	
3	11	9	species
13	48	39	% »
320	1 443	12 450	ind.
2	10	88	% »
8	29	63	average of percentages

B.

Table p. 352.

The composition of the fauna is:

ft	fr	prt	
8	17	11	species
22	47	31	% »
6 505	4 860.	55 370	ind.
10	7	83	% »
16	27	57	average of percentages

a	b	l	
4	17	15	species
11	47	42	% »
775	9 115	55 980	ind.
1	14	85	% »
6	31	63	average of percentages

With the exception of *Mytilus edulis*, the rare occurrence of which may depend mainly on other causes than bathymetrical ones, the shallow-water forms are, on the whole, numerously represented. Specially characteristical are *Bittium reticulatum* and *Rissoa parva*. From this, as well as from the small-stony character of the shell-gravel, the latter was probably deposited at a depth of about 10 *m*, or when about 50 % of the last upheaval was reached.

Otterö.

Table p. 353.

See p. 271. This refers to the shell-bearing coarse gravel above the post-glacial clay at section B.

The composition of the fauna is:

	ft	fr	prt	
{	7	8	9	species
{	29	33	38	% »
{	1 240	345	8 195	ind.
{	13	3	84	% »
	21	18	61	average of percentages

	a	b	l	
{	3	11	10	species
{	12	46	42	% »
{	160	1 370	8 140	ind.
{	2	14	84	% »
	7	30	63	average of percentages

The nature of the shell-bearing gravel and the richness of *Litorina litorea-rudis* point to its undoubtedly littoral character. The time of formation, consequently, can with certainty be referred to the last part of the last upheaval.

2. Shell-beds not superimposed on post-glacial clay.

Lund.

Table p. 348.

3 *km* E of Strömstad, 0·3 *km* SW of Lund, c. 26 *m* above the sea, G. DE GEER 2/8 1889.

The shell-bed, which is rich in stones, rests on coarse gravel, and is, on an average, 0·5 *m* thick. Samples from depths of 0·4 and 0·9 *m*.

The composition of the fauna is:

	ft	fr	prt	
{	9	25	17	species
	18	49	33	% »
{	6 473	15 328	34 005	ind.
	12	27	61	% »
	15	38	47	average of perce.tages

	a	b	l	
{	5	22	24	species
	10	43	47	% »
{	1 848	18 730	33 293	ind.
	3	35	62	% »
	7	39	54	average of percentages

Although *Mytilus edulis* is very sparsely present, and *Litorina litorea-rudis* is fairly scarce, the shell-bed, to judge from its composition in other respects as well as from its stony character, was deposited in relatively shallow water. The increase of the shallow-water forms upwards, and the percentage composition, show that the formation of the bed took place during the first third of the sero-post-glacial upheaval.

Holkedalskilen.

Table p. 348.

1·3 *km* S of Strömstad, the northern side of Holkedalskilen, 25·9 *m* above the sea-level, G. De Geer July 1889.

One sample. The composition of the fauna is:

	ft	fr	prt	spr	
{	8	24	12	1	species
	18	53	27	2	% »
{	1 930	3 223	30 935	10	ind.
	5	9	86	—	% »
	12	31	56	1	average of percentages

	a	b	1	
{	4	20	21	species
	9	44	47	% »
{	583	3 723	31 215	ind.
	2	10	88	% »
	5	27	68	average of percentages

The shell-bed is fairly stony. Among the distinctive shallow-water forms *Litorina litorea-rudis* and *Lacuna divaricata* are fairly richly represented. *Bittium reticulatum* occurs in extraordinary numbers, and *Rissoa parva* and *R. interrupta* are found numerously. From these facts, and from the composition in general, it is probable that the shell-bed was deposited in relatively shallow water and during the first third of the last upheaval.

Skälleröd.

Table p. 348.

16 *km* SSE of Strömstad, Skälleröd at Kragenäs sta., c. 24 *m* above the sea, 1915.

The shell-bed is covered by a sand-layer some *dm* thick. The samples are from depths of 0·2, 0·5, 1·4 and 2·4 *m*. The uppermost and the lowest samples are exceedingly sandy, and the central ones somewhat so. Beneath the shell-bed there lies pure sand.

The shell-bed occurs on a rocky slope lying at an angle of about 10°. Some twenty *m* above the shell-bed there rises, at a gentle slope, a rocky eminence to a height of some *m* above the bed.

The composition of the fauna is:

	ft	fr	prt	
{	9	25	16	species
	18	50	32	% »
{	19 600	34 561	82 320	ind.
	15	25	60	% »
	16	38	46	average of percentages

	a	b	l	
{	5	23	22	species
	10	46	44	% »
{	8 555	42 621	83 478	ind.
	6	32	62	% »
	8	39	53	average of percentages

The bed is specially characterized by *Rissoa parva*, *R. interrupta*, and *Bittium reticulatum*. Among the typical shallow-water forms *Lacuna divaricata* is very general and *Litorina litorea-rudis* fairly so. The bed was probably deposited at a depth of 5 to 10 *m* and, to judge from the increasing frequency upwards of the shallow-water forms, during upheaval. The composition of the fauna, too, points to formation during the last regression.

Prästängen.

Table p. 349.

1 *km* SE of Strömstad, 21 *m* above the sea, G. De Geer 23/7 1889.

The composition of the fauna of the single sample is:

	ft	fr	prt	
{	7	15	12	species
	21	44	35	% »
{	4 555	7 377	17 265	ind.
	16	25	59	% »
	18	35	47	average of percentages

	a	b	l	
{	4	15	15	species
	12	44	44	% »
{	1 119	10 940	17 246	ind.
	4	37	59	% »
	8	41	51	average of percentages

The shell-gravel is fairly stony and, to judge from the composition of the fauna, etc., was probably deposited in water about 10 *m* deep during the first part of the last regression. By far the greatest rôle is played by *Rissoa parva* and *Bittium reticulatum*, but *Rissoa interrupta* and *Verucа Strömia* also appear very numerously.

Vintermyren.

1 *km* N of Strömstad, c. 5 *m* above the sea, G. De Geer 15/8 1889.

Rich *Ostrea*-clay. From a sample there have been washed (coarseness 2< *mm*):

Lepidopleurus cinereus	1/6 ind.	(fr, l)	*Corbula gibba*	1	(prt, l)
Boreochiton marmoreus	1/2	(ft, a)	*Saxicava rugosa*	3	(ft, a)
Anomia striata	1	(prt, l)	*Tectura virginea*	3	(fr, b)
Ostrea edulis	4	(fr, l)	*Gibbula cineraria*	5	(fr, b)
Pecten varius	2	(prt, l)	*Lunatia intermedia*	1	(fr, l)
Cardium cf. nodosum	1/2	(fr, b)	*Litorina rudis*	1	(ft, b)
» *cf. exiguum*	9	(fr, l)	*Lacuna divaricata*	1	(ft, a)
Tapes sp.	1/2		*Rissoa parva*	5	(prt, l)
Montacuta bidentata	1	(fr, l)	*Bittium reticulatum*	120	(prt, l)
Abra sp.	10		*Nassa reticulata*	13	(fr, l)

The composition of the fauna is:

ft	fr	prt	
4	9	5	species
22	50	28	% »
a	**b**	**l**	
3	4	11	species
17	22	61	% »

To judge by the richness of *Ostrea edulis*, the great number of l-forms, and the composition of the fauna in other respects it is probable that the shell-bearing clay was deposited in water some 10 *m* in depth and during the last regression, or, more exactly, during the first part of this phase.

Lejonkällan.

Table p. 349.

Strömstad, NE of Lejonkällan, 22 *m* above the sea, G. De Geer 22/7 1890.

The composition of the fauna of the single sample is:

ft	fr	prt	
9	19	13	species
22	46	32	% »
2 014	4 054	27 239	ind.
6	12	82	% »
14	29	57	average of percentages

a	b	l	
4	16	21	species
10	39	51	% »
1 093	4 107	27 867	ind.
4	12	84	% »
6	26	68	average of percentages

The fairly large percentage of stones, as well as the character of the fauna, shows that the bed was deposited in shallow water. In addition to the ordinary shallow-water forms there occurs *Psammobia vespertina*, which lives from the low-water mark to a depth of some few *m*, and which gives the bed its character.

From the important rôle played by prt- and l-forms it is highly probable that the shell-bed was deposited during the last upheaval and, in accordance with the other circumstances mentioned above, at a period corresponding to about 30 % of the movement.

Daftö.

4 *km* S of Strömstad, 0·7 *km* SE of the north-western point of Daftö, c. 11 *m* above the sea, G. De Geer 20/8 1890.

Only the following pickings is in hand:

Pecten varius	4 ind. (prt, l)	*Solecurtus antiquatus* .	1½ (ptm, l)
» *tigrinus*	½ (prt, b)	*Mya truncata*	1 (ft, a)
Vola maxima	1 (prt, l)	*Saxicava rugosa*	½ (ft, a)
Astarte compressa	½ (ft, a)	*Emarginula fissura* . . .	5 (prt, l)
Timoclea ovata	½ (prt, b)	*Turritella terebra*	1 (prt, l)
Tapes aureus	7 (fr, l)	*Bittium reticulatum* . . .	8 (prt, l)
Lucinopsis undata	19 (prt, l)	*Aporrhais pes pelecani* . .	1 (fr, l)
Lucina borealis	1 (fr, b)	*Neptunea despecta var. carinata*	1 (ft, a)
Abra alba	2 (fr, l)	*Terebratulina sp.*	½
Psammobia vespertina .	4½ (prt, l)		

The composition of the fauna is consequently:

ft	fr	prt	ptm	
4	4	9	1	species
22	22	50	6 %	»

a	b	l	
4	3	11	species
22	17	61 %	»

The shell-bed is characterized by *Lucinopsis undata*, a species living at a depth of some 20 to 30 *m*, while, apart from *Psammobia vespertina*, it possesses no distinctive shallow-water forms. The bed, consequently, was probably deposited in relatively deep water and, to judge from the specially warm character of the fauna, during the last upheaval, or, more exactly, during the first part of this movement.

Hälle II.

Table p. 412.

5·5 *km* NNE of Strömstad, Hälle, c. 16·5 *m* above the sea, G. De Geer 4/8 1890.

The shell-bed, which is found in the immediate neighbourhood of Hälle III (see p. 337), is 2·2 *m* thick. The samples are from a depth of 1·4 and 1·9 *m* below the surface. Prof. De Geer made some washings of the shell-gravel on the spot through a 3-*mm*-net. The figures show the total number of individuals found in 50 cm^3 of the washed shell-gravel.

The composition of the fauna is:

	ft	fr	prt	
{	10	16	14	species
	25	40	35	% ›
{	97	292	652	ind.
	9	28	63	% ›
	17	34	49	average of percentages
	a	b	l	
{	5	15	20	species
	12	38	50	% ›
{	34	358	631	ind.
	3	35	62	% ›
	8	36	56	average of percentages

The lower sample contains some stones.

The composition of the fauna makes it probable that the shell-bed was deposited during the last upheaval.

Sydkoster.

Table p. 349.

10 *km* ESE of Strömstad, at Öfre Kile, c. 15 *m* above the sea, G. DE GEER 2/8 1893.

In a pickings Prof. DE GEER has found the following species, not represented in the statistical analysis:

Lucina borealis (fr, b)
Mactra elliptica (prt, b)
Psammobia ferröensis (spr, b)
Triforis perversa (prt, l)

The composition of the fauna is:

	ft	fr	prt	spr	
{	7	22	14	1	species
	16	50	32	2	% ›
{	4 398	3 270	37 389	—	ind.
	10	7	83	—	% ›
	13	29	57	1	average of percentages

	a	b	l	
{	3	21	20	species
	7	48	45	% »
{	693	6 634	38 260	ind.
	1	15	84	% »
	4	31	65	average of percentages

The shell-bed is very stony. The characteristic forms are *Rissoa parva* and *Bittium reticulatum*. Although *Mytilus edulis* is rather scarce and *Litorina litorea-rudis* is rare, the shell-bed, consequently, was probably deposited in comparatively shallow water and, to judge from the composition, at about 50 % of the last upheaval.

Grandalen.

Table p. 349.

2 *km* N of Strömstad, 0·1 *km* NNE of Grandalen, c. 14 *m* above the sea, G. De Geer 15/8 1889.

One sample. The composition of the fauna is:

	ft	fr	prt	
{	5	18	10	species
	15	55	31	% »
{	1 510	3 405	80 060	ind.
	2	4	94	% »
	9	29	62	average of percentages

	a	b	l	
{	4	13	16	species
	12	39	49	% »
{	1 240	3 065	80 310	ind.
	1	4	95	% »
	7	21	72	average of percentages

The shell-bed contains much stone. *Mytilus edulis* is wanting, and *Litorina litorea-rudis* is sparsely represented. *Bittium reticulatum* and *Rissoa parva* appear with extraordinary frequency, and *R. violacea* is found in great numbers. Finally, the southern forms predominate on the whole.

The shell-bed, consequently, was certainly deposited during the last upheaval and probably at about 50 % of the movement.

Kile.

9·5 *km* ESE of Strömstad, Sydkoster, 0·2 *km* N of Öfre Kile, cc. 14 *m* above the sea, G. De Geer 2/8 1893.

Prof. De Geer has in a pickings determined the following species:

Anomia spp.	11 ind.	
Ostrea edulis	17	(fr, l)
Pecten varius	18	(prt, l)
Mytilus edulis	16	(ft, b)
Astarte compressa	12	(ft, a)
Timoclea ovata	23	(prt, b)
Tapes aureus	21	(fr, l)
Lucina borealis	14	(fr, b)
Mactra elliptica	15	(prt, b)
Psammobia ferröensis	19	(spr, b)
Thracia papyracea	22	(prt, l)
Corbula gibba	13	(prt, l)
Tectura virginea	9	(fr, b)
Litorina litorea	4	(ft, b)
Rissoa parva	8	(prt, l)
Bittium reticulatum	3	(prt, l)
Triforis perversa	2	(prt, l)
Polytropa lapillus	7	(fr, b)
Nassa reticulata	5	(fr, l)
Balanus cf. crenatus	1	(ft, b)

The composition of the fauna is, consequently:

ft	fr	prt	spr	
4	6	8	1	species
21	32	42	5	% »

a	b	l	
1	9	9	species
5	47	48	% »

The shell-bed is evidently characterized by *Ostrea edulis*, and was certainly deposited at the middle of the last regression.

Tånga.

5·5 *km* SSW of Strömstad, at å in Tånga (the geological map-section »Strömstad»), c. 14 *m* above the sea, G. DE GEER 19/8 1890.

In his geological diary, Prof. DE GEER mentions from this locality *Tapes decussatus* 1 ind. and *T. aureus* several ind.

The shell-bed was probably deposited during the last upheaval.

Svälte.

Table p. 352.

6·5 *km* NNE of Grafvarna, 0·7 *km* W of Svälte, at the southern end of the bay, c. 4 *m* above the sea, 1915.

The shell-bed occurs in a glen below a hill of some small height. The thickness is more than 3 *m*. The underlying strata were not reached. The samples analysed are from depths of 0, 0·6, and 2·6 *m*.

The composition of the fauna is:

ft	fr	prt	spr	
10	24	23	3	species
17	40	38	5	% »
12 780	25 080	31 452	21	ind.
18	36	46	—	% »
18	38	42	2	average of percentages

a	b	l	
7	29	24	species
12	48	40	% »
3 971	33 286	33 514	ind.
6	47	47	% »
8	48	44	average of percentages

The stone-percentage in the lowest-lying sample is very inconsiderable, but in the uppermost it becomes fairly large. The markedly shallow-water forms are somewhat few in number, but *Bittium reticulatum*, *Rissoa interrupta*, and *R. parva* are richly represented and increase in numbers upwards. In spite of the low percentage of the prt- and l-forms, a condition of things that may probably -- in part at least — be the result of the bed having been deposited in relatively deep water, the bed, consequently, was in all likelihood deposited during the latter part of the last upheaval.

S. Öddö.

4 *km* SSW of Strömstad, E of the north-western part of Ramnekilen, c. 9 *m* above the sea-level, G. DE GEER 12/8 1890.

Only a pickings is in hand:

Tapes decussatus	15 ind,	(prt, l)
» *aureus*	16	(fr, l)
» *pullastra*	1/2	(fr, h)

All the three species prefer shallow water, and the land, at the time of the deposition of the bed, probably lay some 10 or 15 *m* lower than at the present day. It is highly probable that the deposition took place during the last regression, for the two warmer species never appear in any large numbers in beds that are certainly transgressional ones. The great frequency of *Tapes decussatus* at such a low level is of great climatological interest.

Kjellviken.

Table p. 352.

4·5 *km* NNW of Strömstad, 1·2 *km* NW of Kjellviken, 6·3 *m* above the sea, G. DE GEER 30/7 1890.

From this shell-bed, which is more than 1·5 *m* thick, there has been analysed one sample taken 1 *m* below the surface.

The composition of the fauna is:

ft	fr	prt	spr	
7	19	16	1	species
16	44	37	3	% »
17 670	5 457	11 775	5	ind.
51	15	33	1	% »
33	30	35	2	average of percentages

	a	b	l	
{	4	19	20	species
	9	44	47	% »
{	2 637	19 120	11 750	ind.
	10	57	33	% »
	9	51	40	average of percentages

Judging by the large percentage of stones, the presence of the littoral *Patella vulgata* and *Psammobia vespertina*, and the relatively great frequency of the ordinary shallow-water forms, the bed was deposited in shallow water. In consequence of the extraordinary richness of *Verruca Strömia* the bed obtains an apparently cold character contrasting with the large number of the warmth-demanding *Rissoa parva*. In this case, therefore, it would be best to lay chief weight on the specificpercentages. Of importance, too, is the comparatively numerously represented *Ostrea edulis*. Taking one circumstance with the other, the writer considers it probable that the shell-bed was deposited during the latter part of the last upheaval.

Kebal.

Table p. 352.

1·5 *km* N of Strömstad, c. 1·5 *m* above the sea, G. De Geer 17/8 1889.

The greater part of this shell-bed has been quarried away. The composition of the fauna of the single sample is:

	ft	fr	prt	spr	
{	9	15	16	2	species
	21	36	38	5	% »
{	2 500	5 423	28 605	140	ind.
	7	15	78	—	% »
	14	25	58	3	average of percentages

	a	b	l	
{	8	15	19	species
	19	36	45	% »
{	1 488	6 455	28 760	ind.
	4	18	78	% »
	11	27	62	average of percentages

The shell-gravel is fairly stony. Characteristic species are *Bittium reticulatum*, *Rissoa parva*, and *Ostrea edulis*. This fact, as well as the composition as a whole should, probably, show that the bed was deposited in water some 10 *m* deep during the last regression, or, in other words, during the last half of this phase.

Baggeröd.

Table p. 352.

7 *km* NNE of Strömstad, SW of Baggerödsfjärden, 0·5 *m* above the sea, G. De Geer 3/8 1890.

One sample at 0·3 *m* depth.

The composition of the fauna is:

	ft	fr	prt	spr	
{	8	15	10	1	species
	23	44	30	3	% »
{	925	1 365	29 510	5	ind.
	3	4	93	—	% »
	13	24	62	1	average of percentages

	a	b	l	
{	4	14	16	species
	12	41	47	% »
{	373	1 760	29 527	ind.
	1	6	93	% »
	7	23	70	average of percentages

The shell-gravel is fairly stony. *Mytilus edulis* is practically wanting, and *Litorina litorea-rudis* is relatively sparse. *Ostrea* *edulis* and *Bittium reticulatum* are characteristic forms, and prt- and l-species predominate.

Thus, the shell-bed was probably deposited in water some 10 *m* deep, and certainly during the last upheaval.

Mörhult II.

Table p. 353.

See p. 290. The *Ostrea*-gravel.

The composition of the fauna is:

ft	fr	prt	
7	12	5	species
29	50	21	% »
2 435	2 335	22 860	ind.
9	8	83	% »
19	29	52	average of percentages

a	b	l	
2	11	11	species
8	46	46	% »
380	3 890	23 240	ind.
1	14	85	% »
5	30	65	average of percentages

The shell-gravel is rich in stones. *Rissoa parva* appears in extraordinary numbers, and *Bittium reticulatum* is very numerously represented.

As was mentioned, the shell-gravel was deposited — as shown by the composition of the fauna and the frequency of *Ostrea edulis* — during the latter part of the last upheaval.

Furuholmen.

1 *km* SW of Strömstad, at the sea-level, G. DE GEER 10/8 1890.

In a pickings occur these species:

Pecten varius	½ ind. (prt, l)	*Abra sp.*	½
» *septemradiatus* . .	½ (prt, b)	*Macoma calcaria*	1 (ft, a
Cardium echinatum . . .	1 (fr, l)	*Psammobia ferröensis* .	2 (spr, b)
Isocardia cor	1 (spr, l)	*Solecurtus antiquatus* .	1½ (ptm, l)
Venus gallina	1 (prt, b)	*Antalis entalis*	5 (prt, b)
Timoclea ovata	½ (prt, b)	*Lunatia intermedia* . . .	1 (fr, l)
Dosinia lincta	1½ (spr, l)		

The composition of the fauna is:

ft	fr	prt	ptm	spr	
1	2	5	1	3	species
8	17	42	8	25	% »

a	b	l	
1	5	6	species
8	42	50	% »

The composition of the fauna makes it probable that the shell-bed was deposited in water some 10 *m* deep and during the sero-post-glacial upheaval.

Nordkoster.

Table p. 353.

10·5 *km* WSW of Strömstad, N of the landing-stage Bopallen of Nordkoster, 3·3 *m* above sea-level, G. De Geer 1/8 1893.

The shell-bearing layers are about 1·5 *m* thick, probably with underlying sand. Samples from depths of 0·3 and 0·7 *m*.

The composition of the fauna is:

ft	fr	prt	spr	
7	24	13	1	species
16	53	29	2	% »
3 759	14 961	15 803	5	ind.
11	43	46	—	% »
13	48	38	1	average of percentages

	a	b	l	
{	5	19	21	species
{	11	42	47	% »
{	2 384	15 793	15 748	ind.
{	7	47	46	% »
	9	44	47	average of percentages

The shell-bed, especially in its central horizon, is rich in stones and also in *Ostrea edulis*. *Litorina litorea-rudis* is wanting, and *Mytilus edulis* is sparsely represented. The shallow-water forms increase in frequency upwards, a fact which probably points to deposition during a period of decreasing depth. The water, in any case, can hardly ever have been of any great depht. Although the evidence is not unanimous, and although the percentages of prt- and l-forms are relatively low, the writer is inclined to believe that the bed was deposited during the latter part of the last upheaval.

Nöddö.

Table p. 353.

8 *km* SSE of Strömstad, 0·3 *km* WNW of Nöddö, 4·2 *m* above the sea (Hägg 1910, p. 472), G. De Geer 22/8 1890.

In Professor De Geer's geological diary in the archives of the Geological Survey of Sweden, there is found the following account of the *Tapes*-species found in the fauna of the bed:

	left valves	right valves	both valves together
Tapes aureus	76	90	12
» *pullastra*	9	14	1
» *decussatus*	38	33	3

The composition of the fauna of the single sample is:

	ft	fr	prt	ptm	
{	9	19	14	1	species
{	21	44	33	2	% »
{	2 780	3 370	26 885	45	ind.
{	9	10	81	—	% »
	15	27	57	1	average of percentages

	a	b	l	
{	4	19	20	species
	9	44	47	% »
{	670	5 215	27 060	ind.
	2	16	82	% »
	6	30	64	average of percentages

The shell-bed is rich in small stones. As HÄGG has already pointed out, the fauna and, especially, the frequency of the *Tapes*-species point to its having been deposited in very shallow water, only some few *m* deep. The primary position of the shell-bed is, as Prof. DE GEER has orally stated, probably fully shown by the great number of *Tapes*-individuals with both shells attached to each other. The composition of the fauna, together with the characteristics already mentioned, show, undoubtedly, that the bed was deposited during the final part of the last upheaval. The great frequency of *Tapes decussatus* at so late a time is of great climatological interest.

Karholmen.

Table p. 353.

2 *km* SSW of Strömstad, in the north-western bay of Karholmen, at the sea-level, G. DE GEER 26/8 1889.

The composition of the fauna of the single sample is:

	ft	fr	prt	
{	8	13	13	species
	24	38	38	% »
{	3 670	1 883	19 384	ind.
	15	7	78	% »
	19	23	58	average of percentages

	a	b	l	
{	3	17	14	species
	9	50	41	% »
{	570	4 903	19 176	ind.
	2	20	78	% »
	5	35	60	average of percentages

The shell-gravel is rather sandy. *Mytilus edulis* is sparsely represented, but *Litorina litorea-rudis* is richly so. *Bittium reticulatum* dominates to an overwhelming extent, and *Rissoa parva* is very rich. Interesting and of importance is the presence of *Mya arenaria*, this occurrence being the oldest hitherto known in Bohuslän.

The shell-bed was probably deposited in water some few *m* in depth, and during the final part of the last upheaval.

Brattskär.

Table p. 353.

10 *km* SSW of Strömstad, in a bay in the south-eastern part of Brattskär, 0.3 *m* above the sea, G. De Geer 5/7 1894

The composition of the fauna of the single sample is:

ft	fr	prt	
7	20	14	species
17	49	34	% »
9 030	3 211	15 975	ind.
32	11	57	% »
25	30	45	average of percentages

a	b	l	
5	17	19	species
12	42	46	% »
1 710	10 560	15 826	ind.
6	38	56	% »
9	40	51	average of percentages

The shell-bed is fairly stony. To judge by the frequency of *Litorina litorea-rudis*, as well as from the composition of the fauna in other respects, the bed was deposited in quite shallow water and during the very last part of the sero-postglacial upheaval.

There have been found in the shell-bed some Balanid-shells, vividly recalling *Balanus balanoides.* It is true that no very serious attempt has been made to distinguish this species from *B. crenatus*, but it should seem as if in the other post-glacial shell-beds there occurred only the latter or *B. crenatus.*

Recent shell-beds.

Gullmaren.

Table p. 353.

Gullmaren, unknown depth, scraped-up shell-gravel, A. Goës. The composition of the fauna is:

ft	fr	prt	ptm	spr	
12	18	19	1	2	species
23	35	36	2	4	% »
37 948	29 154	15 686	—	3	ind.
46	35	19	—	—	% »
34	35	28	1	2	average of percentages

a	b	l	
9	22	21	species
17	42	41	% »
4 196	60 467	15 501	ind.
5	76	19	% »
11	59	30	average of percentages

The shell-gravel contains some stones and a little *Corallina officinalis.* There occur in greatest frequency *Verruca Strömia*, *Anomia spp.*, and *Bittium reticulatum*; the extreme richness of the first-named giving rise to the high percentage of the ft- and b-species.

The shell-bed is probably recent.

Herföl.

9 *km* NW of Strömstad, south-western side of Herföl, c. 14 *m* below the sea-level, G. De Geer.

A pot taken from the sea-bottom contained a clay rich in shells. In a quantity of this, which was neither weighed nor measured, there were found:

Lepidopleurus cinereus	1/2 ind.	(fr, l)	*Saxicava rugosa*	6	(ft, a)
Boreochiton ruber	1/3	(fr, a)	*Tectura virginea*	7	(fr, b)
Anomia ephippium	1 1/2	(fr, b)	*Gibbula cineraria*	46	(fr, b)
» *aculeata*	1	(fr, b)	*Litorina rudis*	2	(ft, a)
» *striata*	2 1/2	(prt, l)	*Lacuna divaricata*	1	(ft, a)
Pecten varius	2 1/2	(prt, l)	*Onoba striata*	1	(fr, b)
Mytilus edulis	1/2	(ft, b)	*Bittium reticulatum*	83	(prt, l)
Cardium cf. exiguum	1	(fr, l)	*Nassa reticulata*	1	(fr, l)
» *fasciatum*	2	(prt, b)	*Buccinum undatum*	2	(prt, b)
Timoclea ovata	2	(prt, b)	*Balanus cf. crenatus*	24	(ft, b)
Montacuta bidentata	1/2	(fr, l)	» *porcatus*	1	(ft, a)
Abra alba	5 1/2	(fr, l)	*Verruca Strömia*	+	(ft, a)
Corbula gibba	7 1/2	(prt, l)	*Echinocyamus pusillus*	1	
Mya sp.	1/2				

The composition of the fauna is:

ft	fr	prt	
7	11	7	species
28	44	28 %	»
a	b	l	
4	12	9	species
16	48	36 %	»

This shell-deposit is of interest as it evidently dates from our days. Compared with those from sero-post-glacial times, the percentages of prt- and l- forms are very low. It would be precipitate, however, to draw any conclusions from this fact with respect to climatic conditions.

Shell-beds of undeterminable age.

Strömstad.

Ö. Brogatan and N. Bergsgatan, c. 7 *m* above the sea, G. De Geer 4/6 1894.

The shell-gravel is scarcely 0.1 *m* thick, and is superimposed on gravel and covered by mould.

Only a pickings, in which have been determined:

Anomia striata . . .	1/2 ind.	(prt, l)
Ostrea edulis	1	(fr, l)
Pecten varius	+	(prt, l)
» *septemradiatus*	+	(prt, b)
Mytilus edulis . . .	1/2	(ft, b)
» *modiolus* . .	1/2	(fr, b)
Cardium echinatum .	1	(fr, l)
» *nodosum* .	1	(fr, b)
» *fasciatum* .	1 1/2	(prt, b)
Laevicardium norvegicum	1/2	(fr, l)
Cyprina islandica . .	1 1/2	(fr, b)
Astarte compressa .	2 1/2	(fr, a)
Timoclea ovata . . .	2 1/2	(prt, b)
Tapes aureus	2	(fr, l)
Lucinopsis undata .	1/2	(prt, l)
Lucina borealis . . .	2 1/2	(fr, b)
Solen sp.	+	
Thracia sp.	+	
Corbula gibba	2 1/2	(prt, l)
Mya truncata	1/2	(ft, a)
Tectura virginea	1	(fr, b)
Emarginula fissura . . .	1	(prt, l)
Lunatia intermedia . . .	2	(fr, l)
Lacuna divaricata . . .	2	(ft, a)
Rissostomia membranacea	2	(fr, l)
Bittium reticulatum . .	2	(prt. l)
Aporrhais pes pelecani . .	1	(fr, l)
Triforis perversa	1	(prt, l)
Nassa reticulata	3	(fr, l)
Waldheimia sp.	1/2	
Balanus porcatus	1	(ft, a)

The composition of the fauna is, consequently:

ft	fr	prt	
4	14	10	species
14	50	36	% »
a	b	l	
4	9	15	species
14	32	54	% »

The composition points to the shell-bed having been deposited during the latter part of the last upheaval. Still, it is possible that the composition, being determined from a pickings, does not give a correct view of the conditions, and that the superimposed mould is derived from a clay deposited during the post-glacial depression.

Hälle III.

Table p. 412.

5·5 *km* NNE of Strömstad, Hälle, c. 13 *m* above the sea, G. De Geer 4/8 1890. Close by Hälle II (see p. 321).

Prof. De Geer measured this section:

uppermost, gravelly, downwards clayey post-glacial shell-gravel	0·9 *m*
glacial shell-bearing clay	0·2 +

The only sample was taken on the boundary between the shell-bed and the partially redeposited clay, and contains a mixed glacial and post-glacial fauna. Prof. De Geer made a washing of the shell-gravel on the spot with a 3-*mm*-net. Of this there has been analysed 50 cm^3, weighing 64 *gr*.

In a pickings occur the following species not found in the sample:

Pecten septemradiatus	1 ind.	(prt, b)
Pecten tigrinus	1 1/2	(prt, b)
Vola maxima	1/2	(prt, l)
Leda pernula	1	(ft, a)
» *minuta*	4	(ft, a)
Portlandia arctica	1 1/2	(ft, a)
Cyprina islandica	2	(fr, b)
Astarte compressa	5	(ft, a)
Venus gallina	1	(prt, b)
Tapes spp.	1	
Lucina borealis	13	(fr, b)
Axinus flexuosus	1	(prt, b)
Mactra subtruncata	1/2	(prt, l)
Macoma calcaria	28	(ft, a)
Antalis entalis	3	(prt, b)
» *striolata*	1	(ft, a)
Patella vulgata	1	(fr, b)
Puncturella noachina	1	(ft, a)
Natica affinis	1	(ft, a)
Aporrhais pes pelecani	6	(fr, l)
Clathurella linearis	1	(fr, l)
Nassa incrassata	4	(fr, b)
Buccinum undatum	1	(prt, b)
Neptunea despecta var. carinata	6	(ft, a)

As it is not possible to distinguish with certainty the glacial forms from those of post-glacial age, a determination of the time of the deposition of the post-glacial part of the shell-bed is impossible.

Tables.

The molluscs have been divided, after GERARD DE GEER and the writer, into groups in accordance with their time of immigration into Bohuslän. The shell-beds are arranged according to age, so that the time for the immigration of the various species, in post-glacial age, can be read more exactly from the tables. The figures signify the calculated number of individuals per dm^3 of shell-gravel. Often not separable, *Litorina litorea* and *L. rudis* have been brought together. Under *sp.* after a genericname there have often been brought together different species, belonging to the genus, but not more exactly determinable. The Echinoids have not been taken into account in the calculations of the composition of the fauna. The time of immigration of the now common *Balanus balanoides* L. is unknown (cfr. p. 334). For the sake of completeness those forms, too, are included which have been found in pickings only.

An asterisk * signifies that Dr. NILS ODHNER has kindly carried out the determination; in addition to those so marked, he has determined various young specimens and less characteristic individuals.

Shell-beds from the primo-post-glacial re- →

		Nyckleby p. 284				Mörhult I p. 285						Summinge p. 286		Lunnevik I p. 287					
	Locality: height in *m* above the sea	c. 23				c. 12·5						11		c. 17					
	Samples: »	c. 22·3		c. 22·6		c. 9		c. 10		c. 12		10		c. 17		c. 2		c. 3	
	Weight in *gr* of whole sample, 0·2 dm^3	279		266		343		245		274		182		195		153		148	
	» material 2 < *mm*	51		26		162		90		32		35		49		30		40	
	» » 1—2 *mm*	46		56		46		60		59		24		34		27		33	
	Analysed part of dm^3	1/30	1/10	1/50	1/5	1/40	1/10	1/40	1/20	1/40	1/15	1/30	1/10	1/30	1/10	1/20	1/10	1/30	1/10
	Coarseness of material in *mm*	1—2	2 <	1—2	2 <	1—2	2 <	1—2	2 <	1—2	2 <	1—2	2 <	1—2	2 <	1—2	2 <	1—2	2 <
Redeposited	1 *Portlandia arctica* GRAY (a)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
ft (Gothi-glacial regressional and fini-glacial transgressional immigrants) ft	2 *Boreochiton marmoreus* FABR. (a)	—	5	8	—	—	—	—	—	—	—	40	—	5	—	—	—	—	—
	3 *Pecten islandicus* MÜLL. (a)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	4 *Mytilus edulis* L. (b)	+	10	—	30	80	20	600	120	320	120	450	150	4 050	2 500	1 260	850	1 650	2 250
	5 *Leda minuta* MÜLL. (a)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	6 *Portlandia lenticula* FABR. (a)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	7 *Astarte compressa* MONT. (a)	—	20	50	25	—	10	—	—	—	—	—	—	—	5	—	—	—	—
	8 » *elliptica* BROWN (a)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	9 *Macoma calcaria* CHEMN. (a)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	10 *Mya truncata* L. (a)	—	—	—	—	—	—	—	—	—	—	—	—	—	5	—	—	—	—
	11 *Saxicava rugosa* L. (a)	—	60	150	75	—	15	80	50	200	15	210	45	330	25	195	125	240	180
	12 *Antalis striolata* STIMPS. (a)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	Pelecypoda: sum	+	90	200	130	80	45	680	170	520	135	660	195	4 380	2 535	1 455	975	1 890	2 430
	13 *Lepeta caeca* MÜLL. (a)	—	—	—	—	—	—	—	—	—	—	—	10	—	—	—	—	—	—
	14 *Puncturella noachina* L. (a)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	15 *Mölleria costulata* MÖLL. (a)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	16 *Margarita helicina* FABR. (a)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	17 *Litorina litorea* L. (b) / 18 » *rudis* MATON (b)	—	—	—	5	80	30	1 000	200	1 400	60	90	—	330	70	450	130	510	150
	19 *Lacuna divaricata* FABR. (a)	900	40	1 000	45	—	—	—	—	—	—	120	30	990	20	150	—	450	45
	Gastropoda: sum	900	40	1 000	50	80	30	1 000	200	1 400	60	210	40	1 320	90	600	130	990	195
	20 *Balanus crenatus* BRUG. (b)	—	—	—	—	400	130	1 640	2 040	4 000	870	90	+	900	290	720	610	570	225
	21 » *porcatus* DA COSTA (a)	210	10	—	45	40	+	—	60	—	—	—	—	—	—	—	—	—	—
	22 *Verruca Strömia* MÜLL. (b)	4 500	580	5 500	1 775	1 120	70	5 600	650	3 700	225	1 200	90	7 500	100	540	30	780	120
	Balanidae: sum	4 710	590	5 500	1 820	1 560	200	7 240	2 750	7 700	1 095	1 290	90	8 400	390	1 260	640	1 350	345
	23 *Echinus dröbakensis* MÜLL.	+	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Continued on p. 354

gression and the post-glacial transgression

Otterö A ← p. 271 — c. 8										Fjällbacka p. 276 Over! — cc. 20						. . . .
c. 4		c. 5		c. 6		c. 7		c. 7·7		cc. 16·3		cc. 16·8		cc. 17·3		. . . .
153 54 47		129 18 46		168 25 55		181 60 59		289 72 132		293 65 46		257 50 40		170 36 35		. . . .
1/20	1/10	1/40	1/10	1/20	1/10	1/50	1/20	1/20	1/10	1/20	1/10	1/40	1/15	1/20	1/15	. . . .
1—2	2 <	1—2	2 <	1—2	2 <	1—2	2 <	1—2	2 <	1—2	2 <	1—2	2 <	1—2	2 <	. . . .
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1 . . .
5	—	—	—	25	—	8	7	—	—	—	—	—	—	—	—	2 . . .
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	3 . . .
3 390	2 600	4 600	1 600	1 740	1 000	1 500	1 550	360	340	1 650	530	1 800	1 425	1 800	540	4 . . .
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	5 . . .
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	6 . . .
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	7 . . .
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	8 . . .
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	9 . . .
—	—	—	—	—	5	—	10	—	—	—	—	—	8	15	—	10 . . .
300	350	1 000	240	570	180	800	800	480	680	75	50	80	60	105	45	11 . . .
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	12 . . .
3 690	2 950	5 600	1 840	2 310	1 185	2 300	2 360	840	1 020	1 725	580	1 880	1 493	1 920	585	. . . .
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	13 . . .
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	14 . . .
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	15 . . .
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	16 . . .
1 740	220	880	50	1 380	100	500	240	570	400	1 050	100	1 200	150	1 800	180	{17 . . . 18 . . .
610	30	1 520	20	480	—	450	20	270	60	570	20	600	15	600	—	19 . . .
2 350	250	2 400	70	1 860	100	950	260	840	460	1 620	120	1 800	165	2 400	180	. . . .
1 050	400	880	330	780	260	150	140	60	70	2 850	1 280	1 400	1 350	600	600	20 . . .
+	+	—	—	—	—	—	20	—	—	—	—	—	—	—	—	21 . . .
840	160	2 000	60	1 680	30	2 500	220	180	10	780	20	2 600	120	1 950	105	22 . . .
1 890	560	2 880	390	2 460	290	2 650	380	240	80	3 630	1 300	4 000	1 470	2 550	705	. . . .
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	23 . . .

Shell-beds from the post-

	Fjällbacka										Löndal					
	Over! p. 276										p. 288					
. .	cc. 20										cc. 14					
. . .	cc. 17·8		cc. 18·3		cc. 19·3		cc. 19·8		cc. 20		cc. 9·5		cc. 11·5		cc. 13·5	
. .	212		167		210		336		345		248		274		305	
. .	36		26		15		33				75		74		131	
. .	40		38		40		33		21		57		68		64	
. .	1/30	1/10	1/30	1/10	1/30	1/10	1/30	1/5	1/30	1/5	1/40	1/15	1/40	1/10	1/40	1/15
. .	1—2	2<	1—2	2<	1—2	2<	1—2	2<	1—2	2<	1—2	2<	1—2	2<	1—2	2<
. 1	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
. 2	—	—	—	—	—	—	—	—	—	—	—	—	7	—	—	—
. 3	—	+	—	—	—	—	—	—	—	—	—	+	—	+	—	—
. 4	2 250	560	2 100	550	480	140	660	110	60	5	1 200	450	1 000	180	800	24
. 5	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
. 6	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
. 7	—	—	—	—	—	—	—	15	—	—	20	45	—	5	—	—
. 8	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
. 9	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
. 10	—	—	15	—	—	—	—	—	—	—	—	—	—	—	—	—
. 11	570	150	420	80	480	70	330	50	120	10	80	—	360	120	120	15
. 12	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
. .	2 820	710	2 535	630	960	210	990	175	180	15	1 300	495	1 360	305	920	25
. 13	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
. 14	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
. 15	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
. 16	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
. 17 } . 18	2 100	140	1 950	80	540	10	390	35	240	50	840	90	400	70	240	60
. 19	930	30	1 650	+	450	20	450	30	30	—	1 520	60	1 280	30	200	—
. .	3 060	170	3 600	80	990	30	840	65	270	50	2 360	150	1 680	100	440	60
. 20	3 810	1 110	2 850	700	390	110	480	40	30	5	3 320	1 005	1 440	400	2 800	82
. 21	—	—	—	—	—	—	—	—	—	—	—	—	—	10	—	8
. 22	1 860	100	2 550	60	990	10	480	5	—	—	20	8	2 000	70	1 000	3
. .	5 670	1 210	5 400	760	1 380	120	960	45	30	5	3 340	1 013	3 410	480	3 800	871
. 23	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

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glacial transgression

Otterö B						Hvalö				Mörhult II				
p. 271						p. 289				p. 290				
c. 5·3						c. 6				c. 4·3				. . .
c. 3·8 (c. 4·4)		c. 4·5		c. 5·2		c. 3		c. 5		c. 3·3		c. 4		. . .
260		277		266		170		162		399		357		. . .
115		56		44		27		21		188		168		. . .
80		56		73		56		53		44		70		. . .
1/20	1/5	1/20	1/5	1/20	1/5	1/50	1/10	1/50	1/10	1/20	1/5	1/40	1/10	. . .
1–2	2<	1–2	2<	1–2	2<	1–2	2<	1–2	2<	1–2	2<	1–2	2<	. . .
—	3	—	—	—	—	—	—	—	—	—	—	—	—	1 . .
—	—	—	—	—	—	—	—	17	—	—	—	—	—	2 . .
—	—	—	—	—	—	—	—	—	—	—	3	—	—	3 . .
570	460	240	40	120	40	150	60	150	40	60	75	240	230	4 . .
—	—	—	—	—	—	—	—	—	—	—	—	—	—	5 . .
—	—	—	—	—	—	—	—	—	—	—	—	—	—	6 . .
—	3	15	—	45	—	—	—	25	—	—	3	—	5	7 . .
—	—	—	—	—	—	—	—	—	—	—	—	—	—	8 . .
—	—	—	5	—	—	—	—	—	—	—	5	—	—	9 . .
—	—	—	—	—	—	—	—	—	—	—	3	—	—	10 . .
525	535	660	75	1 410	120	2 250	240	1 850	140	30	10	240	60	11 . .
—	—	—	—	—	—	—	—	—	—	—	—	—	—	12 . .
1 095	998	915	120	1 575	160	2 400	300	2 025	180	90	99	480	295	. . .
—	—	—	—	—	—	—	—	—	—	—	—	—	—	13 . .
—	—	—	—	—	—	—	—	—	—	—	—	—	—	14 . .
—	—	—	—	—	—	—	—	—	—	—	—	—	—	15 . .
—	—	—	—	—	—	—	—	—	—	—	—	—	—	16 . .
600	50	270	60	660	50	100	30	—	—	360	80	480	+	17 . . / 18 . .
390	5	150	10	480	10	650	10	500	10	90	—	120	10	19 . .
990	55	420	70	1 140	60	750	40	500	10	450	80	600	10	. . .
+	10	120	20	120	10	—	20	—	10	60	165	320	320	20 . .
—	5	—	—	—	—	—	—	—	10	—	5	—	+	21 . .
390	20	150	10	—	10	10 250	850	11 750	510	300	50	2 600	430	22 . .
390	35	270	30	120	20	10 250	870	11 750	530	360	220	2 920	750	. . .
—	—	—	—	—	—	—	—	—	—	—	—	—	—	23 . .

Shell-beds from the post-glacial transgression

	Rössö-Långö A				Rössö-Långö C				Torseröd		Smittmyren				Fjälla		N. Holt	
	p. 279				p. 279				p. 281		p. 291				p. 282		p. 283	
. . .	8				8				cc. 0·5		31·1				31		c. 32	
. . .	7		7·9		7		7·8		cc. 0·5		30·6		30·9		31		c. 31·5	
. . .	277		289		260		337		285		182		220		345		212	
. . .	81		47		94		94		59		93		114		266		57	
. . .	37		41		35		45		42		42		48		88		37	
. . .	1/25	1/5	1/25	1/5	1/25	1/5	1/25	1/5	1/20	1/10	1/20	1/10	1/20	1/10	1/12	1/6	1/25	1/10
. . .	1—2	2<	1—2	2<	1—2	2<	1—2	2<	1—2	2<	1—2	2<	1—2	2<	1—2	2<	1—2	2<
. . 1	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
. . 2	8	1	—	—	—	—	—	12	—	—	—	—	—	—	—	—	15	—
. . 3	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
. . 4	+	—	—	—	—	—	—	—	840	410	750	1 450	510	450	—	—	350	160
. . 5	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
. . 6	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
. . 7	—	3	—	3	—	—	—	—	—	—	—	—	—	—	24	6	—	—
. . 8	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
. . 9	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
. . 10	—	5	—	—	—	5	—	5	—	—	—	—	—	—	—	3	—	—
. . 11	200	40	225	20	125	40	300	55	210	180	150	210	270	260	12	6	595	200
. . 12	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
. . .	200	48	225	23	125	45	300	60	1 050	590	900	1 660	780	710	36	15	945	360
. . 13	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
. . 14	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
. . 15	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
. . 16	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
. . 17 } . . 18 }	—	—	—	+	—	—	—	5	750	70	120	40	300	210	+	—	315	210
. . 19	125	—	—	—	25	—	100	—	510	40	600	70	750	—	—	—	1 540	200
. . .	125	—	—	+	25	—	100	5	1 260	110	720	110	1 050	210	+	—	1 855	410
. . 20	25	90	150	120	125	150	100	120	570	2 010	—	40	30	70	36	72	525	250
. . 21	—	10	—	5	—	10	—	—	—	—	—	—	—	—	—	18	—	—
. . 22	1 500	110	500	55	1 000	110	1 125	130	480	100	1 800	120	1 260	70	12	6	1 575	180
. . .	1 525	210	650	180	1 125	270	1 225	250	1 050	2 110	1 800	160	1 290	140	48	96	2 100	430
. . 23	—	+	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	20

. . . 358

Shell-beds from the post-glacial transgression maximum

Medvik A p. 292		Medvik B p. 292				Lunnevik II p. 294										
c. 32		c. 32				c. 35										. . . .
c. 26		c. 29		c. 31		c. 27·2		c. 28·5		c. 30		c. 32·5		c. 34		. . . .
242 69 59		215 75 64		194 81 40		267 44 22		237 53 44		244 58 48		241 55 41		212 48 40		. . . .
1/25	1/10	1/25	1/15	1/20	1/15	1/20	1/5	1/20	1/5	1/20	1/5	1/20	1/5	1/20	1/5	. . . .
1—2	2<	1—2	2<	1—2	2<	1—2	2<	1—2	2<	1—2	2<	1—2	2<	1—2	2<	. . . .
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1 . . .
—	—	—	—	—	—	17	—	7	—	3	—	10	—	10	—	2 . . .
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	3 . . .
1 645	375	875	440	690	525	2 600	725	3 700	1 200	3 700	1 540	3 800	1 500	5 000	1 600	4 . . .
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	5 . . .
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	6 . . .
18	—	—	—	—	—	—	5	—	3	—	—	—	—	—	—	7 . . .
—	—	—	—	—	—	—	3	—	—	—	—	—	—	—	—	8 . . .
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	9 . . .
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	10 . . .
18	20	—	—	15	8	70	40	540	145	500	125	320	80	320	30	11 . . .
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	12 . . .
1 681	395	875	440	705	533	2 670	773	4 240	1 348	4 200	1 665	4 120	1 580	5 320	1 630	. . . .
—	—	—	—	—	—	—	5	—	—	—	—	—	—	—	—	13 . . .
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	14 . . .
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	15 . . .
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	16 . . .
1 435	200	1 375	275	900	399	440	30	1 040	155	840	180	920	105	1 600	105	17 . . . 18 . . .
—	—	375	15	150	—	1 600	15	2 460	55	1 720	30	1 340	35	900	—	19 . . .
1 435	200	1 750	290	1 050	399	2 040	50	3 500	210	2 560	210	2 260	140	2 500	105	. . . .
1 890	910	2 300	1 130	960	861	1 260	825	2 000	1 210	2 140	810	1 240	700	320	1 410	20 . . .
—	+	—	—	—	—	—	—	—	—	—	—	—	—	—	—	21 . . .
2 853	55	925	30	450	23	1 040	33	1 120	25	880	15	840	20	1 300	13	22 . . .
4 743	965	3 225	1 160	1 410	884	2 300	858	3 120	1 235	3 020	825	2 080	720	1 620	1 423	. . . .
105	—	—	—	—	—	—	—	+	—	+	—	+	—	—	—	23 . . .

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Shell-beds from the post-

	Rössö p. 296										Hällan p. 297		Hälle I p. 298	
. . .	c. 24										c. 36·5		c. 39	
. . .	c. 21		c. 21·7		c. 22·2		c. 23·3		c. 23·6		c. 36·5		c. 39	
. . .	244		264		252		199		230		300		278	
. . .			32		35		20		76		27		56	
. . .	30		25		25		45		77		98		70	
. . .	1/25	1/5	1/25	1/5	1/25	1/5	1/25	1/5	1/25	1/5	1/50	1/5	1/50	1/5
. . .	1—2	2<	1—2	2<	1—2	2<	1—2	2<	1—2	2<	1—2	2<	1—2	2<
. . 1	—	—	—	—	—	—	—	—	—	—	—	—	—	—
. . 2	13	—	4	—	—	—	4	—	4	—	—	—	—	—
. . 3	—	—	—	—	—	—	—	—	—	—	—	—	—	—
. . 4	2 925	625	2 450	450	1 050	325	2 125	275	3 500	600	—	—	400	200
. . 5	—	—	—	—	—	—	—	—	—	—	—	—	—	—
. . 6	—	—	—	—	—	—	—	—	—	—	—	—	—	—
. . 7	—	5	—	—	—	—	—	—	—	—	150	20	—	—
. . 8	—	—	—	—	—	—	—	—	—	—	—	—	—	—
. . 9	—	—	—	—	—	—	—	—	—	—	—	—	—	—
. . 10	—	—	—	—	—	—	—	—	—	3	—	—	—	—
. . 11	350	65	775	115	575	90	1 300	165	500	80	125	—	25	—
. . 12	—	—	—	—	—	—	—	—	—	—	—	—	—	—
. . .	3 275	695	3 225	565	1 625	415	3 425	440	4 000	683	275	20	425	200
. . 13	—	—	—	—	—	—	—	—	—	—	—	—	—	—
. . 14	—	—	—	—	—	—	—	5	—	—	—	—	—	—
. . 15	—	—	—	—	—	—	—	—	—	—	—	—	—	—
. . 16	+	—	+	—	—	—	—	—	+	—	—	—	—	—
. . 17 } . . 18 }	250	20	225	20	100	20	225	30	950	85	300	+	800	115
. . 19	525	5	300	—	175	10	300	10	925	10	300	—	350	5
. . .	775	25	525	20	275	30	525	45	1 875	95	600	+	1 150	120
. . 20	1 050	295	1 125	225	325	170	+	10	2 650	980	600	+	3 350	625
. . 21	25	15	—	10	+	5	—	—	25	—	—	—	—	—
. . 22	6 750	195	9 625	115	5 000	130	3 600	50	10 125	295	1 500	—	3 250	140
. . .	7 825	505	10 750	350	5 325	305	3 600	60	12 800	1 275	2 100	+	6 600	765
. . 23	+	—	—	—	—	—	—	—	—	—	—	—	—	—

360 . . .

glacial transgression maximum

Stare p. 302				Sandbogen p. 303						Efvenås p. 304		
c. 32·6				cc. 36						29		. . . .
c. 31		c. 32		cc. 34		cc. 35		cc. 36		28·5		. . . .
45 30		327 108 60		311 106 92		302 68 171		231 101 62		261 81 72		. . . .
$^1/_{25}$	$^1/_5$	$^1/_{20}$	$^1/_{10}$	$^1/_{40}$	$^1/_{20}$	$^1/_{40}$	$^1/_{20}$	$^1/_{40}$	$^1/_{20}$	$^1/_{35}$	$^1/_{15}$	. . . .
1–2	2<	1–2	2<	1–2	2<	1–2	2<	1–2	2<	1–2	2<	. . . .
—	—	—	—	—	—	—	—	—	—	—	—	1 . .
—	—	—	—	—	—	7	—	20	—	—	—	2 . .
—	—	—	—	—	—	—	—	—	—	—	—	3 . .
—	15	—	+	—	—	—	—	—	—	665	150	4 . .
—	—	—	—	—	—	—	—	—	—	—	—	5 . .
—	—	—	—	—	—	—	—	—	—	—	—	6 . .
—	—	—	—	—	—	—	—	—	—	—	—	7 . .
—	—	—	—	—	—	—	—	—	—	—	—	8 . .
—	—	—	—	—	—	—	—	—	—	—	—	9 . .
—	—	—	—	—	—	—	—	—	—	—	—	10 . .
25	8	45	+	40	50	20	20	680	370	105	45	11 . .
—	—	—	—	—	—	—	—	—	—	—	—	12 . .
25	23	45	+	40	50	20	20	680	370	770	195	. . .
—	—	—	—	—	—	—	—	—	—	—	—	13 . .
—	—	—	—	—	—	—	—	—	—	—	—	14 . .
—	—	—	—	—	—	—	—	—	—	—	—	15 . .
—	—	—	—	—	—	—	—	—	—	—	—	16 . .
750	165	600	200	360	80	480	+	960	260	240	60	{17 . . 18 . .
125	48	90	—	600	180	1 000	—	800	—	—	70	19 . .
875	213	690	200	960	260	1 480	+	1 760	260	240	130	. . .
50	30	60	20	800	1 200	1 640	640	240	180	4 025	1 350	20 . .
—	—	—	—	—	+	—	—	—	40	—	30	21 . .
25	—	210	10	320	60	1 380	180	3 160	450	240	30	22 . .
75	30	270	30	1 120	1 260	3 020	820	3 400	670	4 265	1 410	. . .
—	—	—	—	—	—	—	—	—	—	+	+	23 . .

361 . . .

Shell-beds from the sero-

	Kilarna		Lund				Holke-dalskilen		Skälleröd							
	p. 306		p. 315				p. 316		p. 317							
. . .	c. 22		c. 26				25·9		c. 24							
. . .	c. 22		c. 25·1		c. 25·6		25·9		c. 21·6		c. 22·6		c. 23·5		c. 23·8	
. . . .	200 68 27		337 119 58		253 58 63		255 99 37		376 69 43		213 27 54		202 95 40		358 68 36	
. . .	1/25	1/20	1/50	1/20	1/50	1/10	1/20	1/10	1/20	1/5	1/40	1/10	1/40	1/10	1/40	1/10
. . .	1—2	2 <	1—2	2 <	1—2	2 <	1—2	2 <	1—2	2 <	1—2	2 <	1—2	2 <	1—2	2 <
. . 1	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
. . 2	—	—	8	—	—	—	5	—	—	—	7	—	—	—	—	—
. . 3	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
. . 4	300	180	—	10	50	15	60	70	60	15	240	70	240	50	+	20
. . 5	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
. . 6	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
. . 7	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
. . 8	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
. . 9	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
. . 10	—	—	—	—	25	—	—	—	—	—	—	—	—	—	—	—
. . 11	250	120	125	80	400	50	210	80	90	5	560	90	760	90	220	80
. . 12	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
. . .	550	300	125	90	475	65	270	150	150	20	800	160	1 000	140	220	100
. . 13	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
. . 14	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
. . 15	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
. . 16	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
. . 17 . . 18	350	60	50	+	100	20	390	110	+	5	360	70	720	30	240	270
. . 19	825	40	200	20	850	30	240	100	180	10	2 320	20	3 200	40	760	80
. . .	1 175	100	250	20	950	50	630	210	180	15	2 680	90	3 920	70	1 000	350
. . 20	275	320	50	+	—	—	90	70	+	5	240	20	40	30	120	20
. . 21	—	+	—	—	—	—	—	—	—	—	—	+	—	—	—	—
. . 22	400	40	1 350	200	2 750	90	450	60	540	30	3 500	170	2 600	110	20	—
. . .	675	360	1 400	200	2 750	90	540	130	540	35	3 740	190	2 640	140	140	20
. . 23	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

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post-glacial regression

Präst-ängen p. 318		Lejon-källan p. 320		T o r s e r ö d p. 307						Sydkos-ter p. 322		Gran-dalen p. 323		
21		22		cc. 5·5						c. 15		c. 14		. . . .
21		22		cc. 1·5		cc. 3·5		cc. 5·5		c. 15		c. 14		. . . .
245 43 56		300 67 59		188 67 42		259 18 30		248 27 51		278 92 82		292 82 124		. . . .
1/40	1/10	1/40	1/5	1/20	1/10	1/20	1/10	1/20	1/10	1/60	1/5	1/80	1/20	. . . .
1–2	2<	1–2	2<	1–2	2<	1–2	2<	1–2	2<	1–2	2<	1–2	2<	. . . .
—	—	—	—	—	—	—	—	—	—	—	—	—	—	1 . . .
28	—	20	—	—	—	—	—	—	—	—	—	30	—	2 . . .
—	—	—	—	—	—	—	—	—	—	—	—	—	—	3 . . .
80	35	20	38	1 050	240	1 140	180	1 050	220	60	20	—	—	4 . . .
—	—	—	—	—	—	—	—	—	—	—	—	—	—	5 . . .
—	—	—	—	—	—	—	—	—	—	—	—	—	—	6 . .
—	—	—	—	—	—	—	—	—	—	—	3	—	—	7 . . .
—	—	—	—	—	—	—	—	—	—	—	—	—	—	8 . . .
—	—	—	—	—	—	—	—	—	5	—	—	—	—	9 . . .
—	—	—	3	—	5	—	—	—	—	—	—	—	—	10 . . .
360	80	400	15	330	80	300	50	330	80	60	5	400	40	11 . . .
—	—	—	—	—	—	—	—	—	—	—	—	—	—	12 . . .
440	115	420	56	1 380	325	1 440	230	1 380	305	120	28	400	40	. . . .
—	—	—	—	—	—	—	—	—	—	—	—	—	—	13 . . .
—	—	—	—	—	—	—	—	—	—	—	—	—	—	14 . . .
—	—	—	—	—	—	—	—	—	—	—	—	—	—	15 . . .
—	—	—	—	—	—	—	—	—	—	—	—	—	—	16 . .
40	70	120	55	600	150	630	30	1 530	130	—	5	160	40	17 . . . 18 . . .
480	70	640	15	420	40	750	10	1 050	60	600	25	720	20	19 . . .
520	140	760	70	1 020	190	1 380	40	2 580	190	600	30	880	60	. . . .
80	—	40	10	2 010	610	570	140	2 190	450	300	70	80	20	20 . . .
—	—	—	—	—	—	—	—	—	—	—	—	—	—	21 . . .
3 200	160	640	8	1 260	60	1 200	100	1 350	80	3 000	250	—	—	22 . . .
3 280	160	680	18	3 270	670	1 770	240	3 540	530	3 300	320	80	20	. . . .
—	—	—	—	—	—	—	—	—	—	—	—	—	—	23 . . .

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Shell-beds from the sero-

	Tofterna A												Tofterna C	
.	p. 308												p. 308	
. . .	8 (14)												c. 8·5 (14)	
. . .	2		3		4		5		6		7		c. 7·5	
. . .	245		219		160		188		255		250		242	
. . .													137	
. . .	60		60		40		50		55		45		43	
. . .	1/25	1/5	1/25	1/5	1/25	1/5	1/25	1/5	1/25	1/5	1/25	1/5	1/10	1/10
. . .	1—2	2<	1—2	2<	1—2	2<	1—2	2<	1—2	2<	1—2	2<	1—2	2<
. . 1	—	—	—	—	—	—	—	—	—	—	—	—	—	—
. . 2	50	1	42	+	17	—	8	—	4	—	—	—	—	[illegible]
. . 3	—	+	+	+	—	—	—	—	—	—	—	—	—	—
. . 4	125	3	875	68	2 075	165	1 925	255	500	50	125	45	200	210
. . 5	—	—	—	—	—	—	—	—	—	—	—	—	—	—
. . 6	13	5	+	8	25	3	13	3	—	—	—	—	—	—
. . 7	13	3	—	—	—	—	—	—	13	—	—	—	—	—
. . 8	—	—	—	—	—	—	—	—	—	—	—	—	—	—
. . 9	—	—	—	—	—	—	—	—	—	—	—	—	—	—
. . 10	—	—	—	—	—	—	—	—	—	—	—	—	—	—
. . 11	475	30	525	20	450	55	675	75	525	55	300	25	160	180
. . 12	—	—	—	—	—	—	—	—	—	—	—	—	—	—
. . .	626	41	1 400	96	2 550	223	2 613	333	1 038	105	425	70	360	390
. . 13	—	—	—	5	—	—	—	—	—	—	—	—	—	—
. . 14	—	—	—	—	—	—	—	—	—	—	—	—	—	—
. . 15	—	—	—	—	—	—	—	—	—	—	—	—	—	—
. . 16	+	—	+	—	—	—	—	—	—	—	—	—	—	—
. . 17, . . 18	—	—	25	—	—	—	475	20	500	10	525	5	240	70
. . 19	2 500	25	1 500	—	1 700	10	2 625	35	1 750	15	1 500	—	640	50
. . .	2 500	25	1 525	5	1 700	10	3 100	55	2 250	25	2 025	5	880	120
. . 20	+	5	100	5	+	5	500	155	325	80	—	30	40	40
. . 21	25	+	25	+	—	10	+	+	—	—	—	15	—	—
. . 22	10 750	395	11 625	180	9 750	140	8 625	235	4 450	185	650	40	760	240
. . .	10 775	400	11 750	185	9 750	155	9 125	390	4 775	265	650	85	800	280
. . 23	—	—	+	—	—	—	+	—	+	—	+	—	—	—
. . .							364							

post-glacial regression

Nötholmen A								Nötholmen B					Rössö-Långö A		
p. 310								p. 310					p. 313		
5 (14)								8 (14)					9		. . . .
0·5		1·5		2·5		3·5		6·6		7·4	7·6		8·3		. . . .
		212		246		251		252		236	235		328		. . . .
								76		56	53		82		. . . .
		40		52		62		63			60		52		. . . .
1/20	1/5	1/20	1/5	1/20	1/5	1/20	1/5	1/50	1/10	1/10	1/50	1/10	1/30	1/5	. . . .
1—2	2<	1—2	2<	1—2	2<	1—2	2<	1—2	2<	2<	1—2	2<	1—2	2<	. . . .
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1 . . .
20?	5?	10	—	—	—	3	—	—	—	—	—	—	—	—	2 . . .
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	3 . . .
20	10	480	35	1 900	325	900	90	75	10	25	50	60	—	—	4 . . .
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	5 . . .
—	—	—	—	—	—	—	—	—	5	—	—	—	—	—	6 . . .
—	3?	—	—	—	—	—	—	—	—	—	—	—	—	—	7 . . .
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	8 . . .
—	—	—	—	—	—	—	3	—	5	—	—	—	—	—	9 . . .
—	—	—	—	—	—	10	—	—	5	5	—	5	—	—	10 . . .
300	95	1 020	120	1 880	500	1 240	215	300	110	120	850	130	180	10	11 . . .
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	12 . . .
320	108	1 500	155	3 780	825	2 150	308	375	135	150	900	195	180	10	. . . .
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	13 . . .
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	14 . . .
—	—	—	—	—	—	—	—	—	—	—	—	—	—	10	15 . . .
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	16 . . .
—	—	40	10	420	60	440	25	100	30	20	400	30	450	60	17 . . . / 18 . . .
380	5	840	45	600	15	760	70	500	30	50	1 400	40	120	—	19 . . .
380	5	880	55	1 020	75	1 200	95	600	60	70	1 800	70	570	70	. . . .
—	5	—	+	60	20	200	85	450	120	230	1 000	310	210	65	20 . . .
+	+	+	—	—	—	—	—	—	10	—	—	10	—	—	21 . . .
7 000	245	2 200	45	850	35	2 080	90	4 500	470	600	4 750	530	120	15	22 . . .
7 000	250	2 200	45	910	55	2 280	175	4 950	600	830	5 750	880	330	80	. . . .
—	—	+	—	—	—	—	+	—	—	—	—	—	—	—	23 . . .

. . . .

Shell-beds from the sero·

	Rössö-Långö B p. 313				Svälte p. 325						Kjell-viken p. 326		Kebal p. 327		Bagge-röd p. 328	
. . . .	9				c. 4						6·3		c. 1·5		0·5	
. . . .	8·3		8·7		c. 1·4		c. 3·4		c. 4		5·3		c. 1·5		0·2	
. . . .	270		275		165		222		305		313		228		254	
. . . .	96		38		4		20		38		115		136		58	
. . . .	92		66		16		35		29		53		54		47	
. . . .	1/50	1/10	1/50	1/10	1/30	1/5	1/40	1/10	1/30	1/5	1/40	1/10	1/50	1/20	1/40	1/10
. . . .	1—2	2<	1—2	2<	1—2	2<	1—2	2<	1—2	2<	1—2	2<	1—2	2<	1—2	2<
. . 1	—	—	—	—	—	—	—	5	—	—	—	—	—	—	—	—
. . 2	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	3
. . . 3	—	—	—	—	—	—	—	+	—	—	—	—	—	—	—	—
. . 4	—	+	50	10	120	+	200	5	120	10	240	190	—	40	—	+
. . 5	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
. . 6	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
. . 7	—	—	—	—	—	—	—	5	—	—	—	—	—	10	—	—
. . 8	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
. . 9	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
. . 10	—	5	—	—	—	—	—	—	—	—	20	—	—	—	—	10
. . 11	200	70	325	15	600	25	560	120	420	20	1 360	230	450	300	280	40
. . 12	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
. . .	200	75	375	25	720	25	760	130	540	30	1 620	420	450	350	280	50
. . 13	—	—	—	—	—	—	—	—	—	—	—	—	—	60	—	—
. . 14	—	—	—	—	—	—	—	—	—	—	—	—	—	20	—	—
. . 15	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
. . 16	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
. . 17 } . . 18 }	800	270	800	30+	150	+	—	+	180	5	280	50	—	—	80	50
. . 19	50	—	100	—	360	15	840	20	750	20	920	100	350	100	—	—
. . .	850	270	900	30	510	15	840	20	930	25	1 200	150	350	180	80	50
. . 20	400	170	800	30	390	5	440	40	390	35	880	200	50	20	360	15
. . 21	—	10	—	—	—	+	120	+	30	5	—	—	—	20	—	—
. . 22	800	100	850	80	2 160	5	2 400	160	2 040	35	12 200	1 000	900	260	80	10
. . .	1 200	280	1 650	110	2 550	10	2 960	200	2 460	75	13 080	1 200	950	300	440	25
. . 23	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
. . . .																

post-glacial regression | Recent

Mörhult II p. 329		Nordkoster p. 330				Nöddö p. 331		Otterö B p. 315		Karholmen p. 332		Brattskär p. 333		Gullmaren p. 334			
c. 4·6		3·3				4·2		c. 5·9		0		0·3				Locality: height in *m* above the sea	
c. 4·4		2·5		3		4·2		c. 5·5		0		0·3				Samples: »	
379		260		285		280		396		254		260		175		Weight in *gr* of whole sample, 0·2 dm^3	
157		95		57		121		140		177		120		15		» material 2< *mm*	
53		26		29		61		85		62		90		77		» » 1—2 *mm*	
1/40	1/10	1/20	1/5	1/25	1/10	1/40	1/10	1/30	1/10	1/25	1/15	1/50	1/20	1/75	1/5	Analysed part of dm^3	
1—2	2<	1—2	2<	1—2	2<	1—2	2<	1—2	2<	1—2	2<	1—2	2<	1—2	2<	Coarseness of material in *mm*	
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1 *Portlandia arctica* GRAY (a)	Redeposited
—	—	—	—	—	—	—	—	—	—	—	—	—	—	12	—	2 *Boreochiton marmoreus* FABR. (a)	
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	3 *Pecten islandicus* MÜLL. (a)	(Gothi-glacial regressional and) fini-glacial transgressional immigrants
+	10	10	13	13	40	20	50	+	10	+	30	350	260	—	30	4 *Mytilus edulis* L. (b)	ft
—	—	—	—	—	—	—	—	—	—	—	—	—	—	38	10	5 *Leda minuta* MÜLL. (a)	
—	—	10?	3?	—	—	—	—	—	—	—	—	—	—	—	—	6 *Portlandia lenticula* FABR. (a)	
—	—	—	—	—	—	—	—	—	—	—	—	—	—	113	—	7 *Astarte compressa* MONT. (a)	
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	8 » *elliptica* BROWN (a)	
—	—	—	—	—	—	—	—	30	—	—	—	—	—	—	—	9 *Macoma calcaria* CHEMN. (a)	
—	—	—	—	—	—	40	20	—	—	—	15	—	—	—	3	10 *Mya truncata* L. (a)	
240	20	480	45	675	130	160	80	45	25	75	+	850	130	2 850	125	11 *Saxicava rugosa* L. (a)	
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	12 *Antalis striolata* STIMPS. (a)	
240	30	500	61	688	170	220	150	75	35	75	45	1 200	390	3 001	168	Pelecypoda: sum	
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	10	13 *Lepeta caeca* MÜLL. (a)	
—	—	—	5	—	—	—	—	—	—	—	—	—	—	—	—	14 *Puncturella noachina* L. (a)	
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	15 *Mölleria costulata* MÖLL. (a)	
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	16 *Margarita helicina* FABR. (a)	
960	260	—	—	—	—	840	450	750	200	825	1 155	2 250	1 200	150	5	17 *Litorina litorea* L. (b) / 18 » *rudis* MATON (b)	
120	—	380	35	550	30	320	20	60	—	450	30	650	20	300	—	19 *Lacuna divaricata* FABR. (a)	
1 080	260	380	40	550	30	1 160	470	810	200	1 275	1 185	2 900	1 220	450	15	Gastropoda: sum	
200	80	280	75	100	130	280	220	90	30	300	135	600	340	825	65	20 *Balanus crenatus* BRUG. (b)	
—	—	—	—	—	—	—	30	—	—	—	—	—	—	600	35	21 » *porcatus* DA COSTA (a)	
500	55	600	75	50	10	200	50	—	—	625	30	1 900	480	32 625	200	22 *Verruca Strömia* MÜLL. (b)	
700	135	880	150	150	140	480	300	90	30	925	165	2 500	820	34 050	300	Balanidae: sum	ft
—	—	—	—	—	—	—	—	—	—	—	—	—	—	+	—	23 *Echinus dröbakensis* MÜLL.	

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Shell-beds from the primo-post-glacial re-

Continued from p. 340

			Nyckleby p. 284				Mörhult I p. 285						Summinge p. 286		Lunnevik I p. 287		→			
		Samples: height in *m* above the sea	c. 22·3		c. 22·6		c. 9		c. 10		c. 12		10		c. 17		c. 2		c. 3	
		Coarseness of material in *mm*	1—2	2 <	1—2	2 <	1—2	2 <	1—2	2 <	1—2	2 <	1—2	2 <	1—2	2 <	1—2	2 <	1—2	2 <
	1	*Lepidopleurus cinereus* L. (l)	20	—	17	—	7	—	+	3	—	5	—	—	20	2	—	—	—	—
	2	*Craspedochilus marginatus* PENN. (b)	—	—	—	—	—	—	18	—	13	—	—	—	—	—	—	—	—	—
fr	3	*Boreochiton ruber* LOWE (a)	15	—	8	3	20	2	67	7	40	—	—	—	40	—	35	2	—	3
		Amphineura: sum	35	—	25	3	27	2	85	10	53	5	—	—	60	2	35	2	—	3
Fini-glacial regressional immigrants	4	*Anomia aculeata* L. (b)	30	20	50	15	40	—	80	100	40	—	180	110	[1])2 790	120	150	170	150	120
	5	› *ephippium* L. (b)	105	250	—	130	240	100	600	800	480	120	900	240		300	480	425	1 050	750
	6	*Ostrea edulis* L. (l)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	+	—	—
	7	*Mytilus modiolus* L. (b)	—	—	—	20	—	—	40	—	—	—	30	15	—	5	30	30	30	75
	8	*Nucula nucleus* L. (l)	—	5	—	5	—	—	—	—	—	—	15	10	—	—	—	—	—	—
	9	› *sp.*	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	10	*Cardium echinatum* L. (l)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	11	› *edule* L. (l)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	12	› *cf. nodosum* TURT. (b)	—	—	—	—	40	—	—	—	—	—	—	—	—	15	—	—	—	—
	13	› *cf. exiguum* GMEL. (l)	—	—	—	—	20	5	20	20	—	—	90	10	—	—	30	5	15	8
	14	› *cf. minimum* PHIL. (b)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	15	› *sp.*	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	16	*Laevicardium norvegicum* SPENGEL (l)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	17	*Cyprina islandia* L. (b)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	18	*Tapes aureus* GMEL. (l)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	19	› *virgineus* L. (l)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	15	5	—	—
	20	› *pullastra* MONT. (b)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	21	› *sp.*	—	—	—	—	—	—	20	—	—	—	15	—	—	—	—	—	—	—
	22	*Lucina borealis* L. (b)	—	—	—	—	—	—	—	10	—	—	—	—	—	—	—	—	—	—
	23	*Lepton nitidum* TURT. (l)	—	—	—	—	—	—	—	—	40	—	15	—	15	—	—	—	—	—
	24	*Montacuta bidentata* MONT. (l)	—	—	—	—	40	5	—	—	200	8	75	—	15	—	30	—	15	—
	25	*Scrobicularia piperata* BELL. (l)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	26	*Abra cf. alba* WOOD (l)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	27	› *sp.*	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	28	*Macoma baltica* L. (b)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	29	› *sp.*	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
fr	30	*Solen ensis* L. (b)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	31	*Thracia villosiuscula* MACG. (b)	—	15	—	15	20	—	40	30	—	15	—	—	—	—	—	—	—	8
		Pelecypoda: sum	135	290	50	185	400	110	800	960	760	143	1 320	385	2 820	440	735	635	1 260	961

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[1]) *A. striata* inclusive.

gression and the post-glacial transgression

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Otterö A										Fjällbacka						
← p. 271										p. 276				Over!		
c. 4		c. 5		c. 6		c. 7		c. 7·7		cc. 16·3		cc. 16·8		cc. 17·3		. . . .
1–2	2 <	1–2	2 <	1–2	2 <	1–2	2 <	1–2	2 <	1–2	2 <	1–2	2 <	1–2	2 <	. . . .
5	—	—	—	10	—	—	—	—	—	—	—	—	—	5	—	1 . . .
—	—	—	—	—	—	8	—	—	—	—	—	—	—	—	—	2 . . .
—	—	53	—	45	2	24	—	10	—	20	—	6	3	5	—	3 . . .
5	—	53	—	55	2	32	—	10	—	20	—	6	3	10	—	. . . .
150	130	320	230	420	130	100	100	15	25	75	50	200	60	45	23	4 . . .
1 920	630	2 600	1 000	1 860	580	500	620	45	120	600	120	700	135	450	195	5 . . .
—	+	—	—	—	30	—	—	—	10	—	—	—	—	—	—	6 . . .
15	60	320	150	90	65	50	120	—	30	—	15	—	30	75	23	7 . . .
—	—	—	—	—	—	—	—	—	—	—	—	20	8	—	—	8 . . .
—	—	—	—	15	—	—	—	—	—	—	—	—	—	—	+	9 . . .
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	10 . . .
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	11 . . .
—	—	—	—	—	—	—	—	—	—	—	—	—	—	30	—	12 . . .
45	—	20	10	45	—	—	—	—	—	—	—	—	—	—	—	13 . . .
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	14 . . .
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	15 . . .
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	16 . . .
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	17 . . .
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	18 . . .
—	10	—	—	60	—	—	10	—	5	—	—	20	—	15	—	19 . . .
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	20 . . .
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	21 . . .
—	—	—	—	—	—	—	—	—	10	—	—	—	—	—	—	22 . . .
—	—	—	—	—	—	—	—	—	—	15	—	20	—	—	—	23 . . .
15	—	200	—	75	5	75	10	—	—	120	—	200	—	90	—	24 . . .
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	25 . . .
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	26 . . .
—	—	—	—	—	—	—	—	—	—	45	—	60	—	—	—	27 . . .
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	28 . . .
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	29 . . .
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	30 . . .
—	10	—	—	15	15	—	10	—	—	—	—	20	—	—	—	31 . . .
2 145	840	3 460	1 390	2 580	825	725	870	60	200	855	185	1 240	233	705	241	. . . .

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Shell-beds from the post-

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	Fjällbacka										Löndal					
	Overl		p. 276								p. 288					
. . . .	cc. 17·8		cc. 18·3		cc. 19·3		cc. 19·8		cc. 20		cc. 9·5		cc. 11·5		cc. 13·5	
. . . .	1—2	2<	1—2	2<	1—2	2<	1—2	2<	1—2	2<	1—2	2<	1—2	2<	1—2	2<
. . . . 1	10	—	—	—	—	—	—	—	—	—	53	—	13	—	—	
. . . . 2	—	—	—	2	10	—	5	—	—	—	—	—	—	—	7	
. . . . 3	20	—	5	—	—	—	5	—	—	—	33	—	40	—	40	
. . . .	30	—	5	2	10	—	10	—	—	—	86	—	53	—	47	
. . . . 4	180	80	—	—	60	35	—	13	—	—	—	—	120	5	—	
. . . . 5	2 200	330	900	150	1 050	95	—	—	—	—	—	8	320	170	200	
. . . . 6	—	+	—	—	—	—	—	—	—	—	—	+	—	5	—	
. . . . 7	15	20	135	10	15	—	15	—	—	—	40	23	—	5	—	
. . . . 8	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	
. . . . 9	15	—	—	—	—	—	—	—	—	—	—	—	—	—	—	
. . . . 10	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	
. . . . 11	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	
. . . . 12	—	—	—	—	3	15	—	—	—	—	—	—	—	—	—	
. . . . 13	30	15	—	—	30	—	105	—	—	3	40	—	—	—	—	
. . . . 14	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	
. . . . 15	—	—	30	—	—	—	—	—	—	—		—	—	—	—	
. . . . 16	—	—	—	—	—	—	—	—	—	—		—	—	—	—	
. . . . 17	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	
. . . . 18	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	
. . . . 19	—	—	—	—	15	—	30	—	—	—	20	—	—	—	—	
. . . . 20	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	
. . . . 21	—	—	15	—	—	—	—	3	—	3	—	—	20	5	—	
. . . . 22	—	—	—	—	—	—	—	3	—	—	—	—	—	—	—	
. . . . 23	30	—	45	—	120	—	75	—	—	—	—	—	—	—	—	
. . . . 24	180	—	360	—	105	—	90	—	15	—	20	—	40	—	20	
. . . . 25	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	
. . . . 26	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	
. . . . 27	—	—	—	—	—	—	15	10	15	5	—	—	—	—	—	
. . . . 28	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	
. . . . 29	—	—	—	—	—	—	—	3	—	—	—	—	—	—	—	
. . . . 30	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	
. . . . 31	—	—	—	—	—	—	—	—	—	—	—	—	—	25	—	
. . . .	2 650	445	1 485	160	1 398	145	330	32	30	11	120	31	500	215	220	

. . . . 370

glacial transgression

343

Otterö B p. 271						Hvalö p. 289				Mörhult II p. 290				
c. 3·8		c. 4·5		c. 5·2		c. 3		c. 5		c. 3·3		c. 4		. . . .
1—2	2<	1—2	2<	1—2	2<	1—2	2<	1—2	2<	1—2	2<	1—2	2<	. . . .
—	—	—	—	5	—	25	5	40	—	5	—	18	3	1 . . .
—	—	—	—	—	—	17	—	8	—	—	—	—	—	2 . . .
15	—	15	1	10	—	80	2	100	—	—	—	—	—	3 . . .
15	—	15	1	15	—	122	7	148	—	5	—	18	3	. . . .
30	23	75	10	—	—	} [1] 5 000	160	} [1] 5 750	150	—	10	—	10	4 . . .
300	210	180	50	—	20		800		500	45	120	60	330	5 . . .
—	5	—	10	—	—	—	+	—	5	—	+	—	—	6 . . .
—	38	—	—	—	—	50	5	125	5	—	5	20	5	7 . . .
—	—	—	—	—	—	—	10	—	5	—	—	—	5	8 . . .
—	—	—	—	—	—	—	—	—	—	—	—	—	—	9 . . .
—	—	—	—	—	—	—	—	—	—	—	—	—	—	10 . . .
—	—	—	—	—	—	—	—	—	—	—	—	—	—	11 . . .
—	3	30	10	60	40	50	5	—	—	30	—	40	5	12 . . .
—	—	30	8	—	—	—	—	—	—	—	—	—	10	13 . . .
—	—	—	—	—	—	—	—	—	—	—	—	—	—	14 . . .
—	—	—	—	—	—	—	—	—	—	—	—	—	—	15 . . .
—	—	—	—	—	—	—	—	—	—	—	—	—	—	16 . . .
—	—	—	—	—	—	—	—	—	—	—	—	—	—	17 . . .
—	—	—	—	—	—	—	—	—	—	—	—	—	—	18 . . .
—	—	—	—	—	—	—	—	—	—	—	—	—	—	19 . . .
—	—	—	—	—	—	—	—	—	—	—	—	—	—	20 . . .
—	—	15	—	—	—	—	—	—	—	—	—	—	—	21 . . .
—	+	—	5	—	5	—	—	—	—	—	—	—	—	22 . . .
—	—	30	—	15	—	200	—	50	—	—	—	—	—	23 . . .
15	—	75	—	75	—	75	—	—	—	—	—	40	—	24 . . .
—	—	—	—	—	—	—	—	—	—	—	—	—	—	25 . . .
—	—	—	—	—	—	—	—	—	5	—	—	—	—	26 . . .
—	3	—	—	45	—	—	—	—	—	—	3	20	—	27 . . .
—	—	—	—	—	—	—	—	—	—	—	—	—	—	28 . . .
—	—	—	—	—	—	—	—	—	—	—	—	—	—	29 . . .
—	—	—	—	—	—	—	—	—	—	—	—	—	—	30 . . .
—	—	—	—	—	—	—	—	—	—	—	—	—	—	31 . . .
345	282	435	93	195	65	5 375	980	5 925	670	75	138	180	365	. . . .

371

[1] *A. striata* inclusive.

Shell-beds from the post-glacial transgression

344

	Rössö-Långö A p. 279				Rössö-Långö C p. 279				Torseröd p. 281		Smittmyren p. 291				Fjälla p. 282		N. Holt p. 283	
. . .	7		7·9		7		7·8		cc. 0·5		30·6		30·9		31		c. 31·5	
. . .	1—2	2 <	1—2	2 <	1—2	2 <	1—2	2 <	1—2	2 <	1—2	2 <	1—2	2 <	1—2	2 <	1—2	2 <
. . 1	+ (?)	—	+ (?)	—	—	—	—	—	—	—	—	—	—	—	+	—	—	—
. . 2	+	—	—	—	—	—	—	—	—	—	5	—	—	—	—	—	6	2
. . 3	—	—	16	—	37	1	33	—	40	—	5	—	20	5	—	—	15	—
. . .	+	—	16	—	37	1	33	—	40	—	10	—	20	5	+	—	21	2
. . 4	—	—	—	—	25	—	—	—	—	15	15	40	60	20	—	—	} [1] 1 155	70
. . 5	100	55	—	15	} 51	58	100	100	510	310	} 750	1 380	[1] 420	[1] 680	12	3		600
. . 6	—	20	—	—					—	30					—	18	—	60
. . 7	—	—	13	3	—	—	—	—	—	5	45	—	—	5	—	—	—	—
. . 8	—	—	—	—	—	+	—	3	—	—	—	—	—	—	+	6	—	—
. . 9	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
. . 10	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	3	—	—
. . 11	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
. . 12	—	—	—	38	25	8	38	—	30	15	—	—	—	—	—	—	—	—
. . 13	—	—	25	5	—	—	—	—	30	10	—	—	—	—	—	—	—	20
. . 14	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
. . 15	—	—	—	—	—	—	—	15	—	—	—	—	—	—	—	—	—	—
. . 16	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
. . 17	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
. . 18	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
. . 19	—	—	—	—	—	—	—	—	—	5	30	—	—	—	—	—	—	—
. . 20	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	+
. . 21	—	—	—	+	—	—	—	—	—	10	—	—	—	—	—	—	—	—
. . 22	—	5	—	3	—	—	—	3	—	20	—	—	—	—	—	—	—	10
. . 23	63	—	25	—	50	—	25	—	30	—	—	—	—	—	—	—	18	—
. . 24	63	—	200	3	38	—	150	—	105	5	30	—	30	—	6	—	18	—
. . 25	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
. . 26	—	5	—	—	—	3	—	60	—	—	—	—	—	—	—	—	—	—
. . 27	25	—	50	—	—	—	50	—	15	—	—	—	—	—	6	—	—	—
. . 28	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
. . 29	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
. . 30	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
. . 31	—	—	—	—	—	—	—	—	—	—	—	—	—	5	—	—	—	—
. . .	251	85	313	67	189	69	363	181	750	425	870	1 420	510	710	24	30	1 191	760

372

Shell-beds from the post-glacial transgression maximum

345

Medvik A p. 292		Medvik B p. 292				Lunnevik II p. 294										
c. 26		c. 29		c. 31		c. 27·2		c. 28·5		c. 30		c. 32·5		c. 34		. . . .
1—2	2<	1—2	2<	1—2	2<	1—2	2<	1—2	2<	1—2	2<	1—2	2<	1—2	2<	. . . .
—	10	—	—	—	—	10	—	10	—	10	—	50	—	—	—	1 . . .
—	—	—	3	—	—	—	—	13	—	—	—	7	—	—	1	2 . . .
23	—	13	—	5	3	37	2	17	1	33	—	17	—	20	—	3 . . .
23	10	13	3	5	3	47	2	40	1	43	—	74	—	20	1	. . . .
53	35	60	7	15	8	120	25	100	8	60	100	60	25	90	20	4 . . .
190	170	60	50	15	8	700	100	1 200	360	1 400	300	800	325	1 000	150	5 . . .
—	10	60	—	—	—	—	3	40	30	40	35	—	15	—	—	6 . . .
53	—	—	15	15	—	—	—	—	—	—	—	—	—	—	—	7 . . .
—	—	—	—	—	—	—	+	—	—	—	—	—	—	—	—	8 . . .
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	9 . . .
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	10 . . .
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	11 . . .
—	5	—	—	—	—	—	—	—	—	30	5	10	3	—	—	12 . . .
—	5	—	—	—	—	40	—	30	10	10	5	10	—	—	—	13 . . .
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	14 . . .
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	15 . . .
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	16 . . .
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	17 . . .
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	18 . . .
18(?)	—	—	—	—	—	—	—	—	8	10?	—	10	—	10	—	19 . . .
—	+(?)	—	—	—	2	—	—	—	—	—	—	—	—	—	—	20 . . .
—	—	—	—	15	8	—	—	10	—	+	+	10	—	—	—	21 . . .
—	—	—	—	—	—	—	15	—	—	—	—	—	—	—	—	22 . . .
53	—	—	—	15	—	—	—	40	—	30	—	3	—	—	—	23 . . .
18	—	—	—	30	—	30	—	40	—	40	—	80	—	—	—	24 . . .
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	25 . . .
—	15	—	—	—	—	—	—	—	—	—	—	—	—	—	—	26 . . .
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	27 . . .
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	28 . . .
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	29 . . .
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	30 . . .
—	—	—	—	—	—	—	—	—	15	—	20	—	18	—	10	31 . . .
685	240	180	72	105	26	890	143	1 460	431	1 620	465	983	386	1 100	180	. . . .

373 . . . .

Shell-beds from the post-glacial

346

	Rössö p. 296										Hällan p. 297		Hälle I p. 298	
	c. 21		c. 21·7		c. 22·2		c. 23·3		c. 23·6		c. 36·5		c. 39	
	1–2	2<	1–2	2<	1–2	2<	1–2	2<	1–2	2<	1–2	2<	1–2	2<
1	8	1	42	—	13	—	4	—	17	—	—	—	—	—
2	—	—	4	1	8	—	8	—	4	—	—	—	—	—
3	21	—	29	—	33	3	23	—	87	1	+ (?)	—	—	—
	29	1	75	1	54	3	35	—	108	1	+ (?)	—	—	—
4	125	70	500	95	250	65	150	35	225	50	25	7	—	—
5	3 000	450	6 750	500	2 375	375	1 950	300	2 250	325	350	18	—	} 45
6	—	—	—	—	—	10	—	—	—	—	—	—	—	
7	—	5	—	20	—	5	—	10	—	—	25	—	23	3
8	—	—	—	+ (?)	—	—	—	—	—	—	—	—	—	—
9	—	—	—	—	—	—	—	—	—	—	—	—	—	—
10	—	—	—	—	—	—	—	—	—	—	—	—	—	—
11	—	—	—	—	—	—	—	—	—	7	—	—	—	—
12	—	—	—	—	—	—	—	—	150	5	—	—	—	—
13	13	3	75	3	26	—	25	—	—	5	—	—	25	50
14	—	—	—	—	—	—	—	—	—	—	—	—	—	—
15	—	—	—	—	—	—	—	—	—	—	—	—	—	—
16	—	—	—	—	—	—	—	—	—	—	—	—	—	—
17	—	—	—	—	—	—	—	—	—	—	—	—	—	—
18	—	—	—	3	—	—	—	—	—	3	—	—	100	10
19	—	—	—	—	—	7	38	—	—	—	—	—	—	—
20	—	—	—	—	—	—	—	—	—	—	—	—	—	—
21	13	3	25	—	—	—	—	+	—	—	—	—	—	—
22	—	—	—	—	—	—	—	—	—	—	—	—	—	—
23	—	—	63	—	—	—	—	—	—	—	50	—	75	—
24	63	—	63	—	25	—	63	—	75	—	25	—	25	—
25	—	—	—	—	—	—	—	—	—	10	—	—	—	—
26	—	—	—	—	—	—	—	—	—	—	—	—	—	—
27	—	—	—	—	—	—	—	—	—	—	—	—	—	—
28	—	—	—	—	—	—	—	—	—	—	—	—	—	—
29	—	—	—	—	—	—	—	—	—	—	—	—	—	—
30	—	—	—	—	—	—	—	—	—	3	—	—	—	—
31	—	5	—	7	—	—	—	—	—	5	—	14	—	—
	3 214	536	7 476	628	2 676	462	2 226	345	2 700	413	475	39	248	108

374

transgression maximum

347

Stare p. 302				Sandbogen p. 303						Efvenås p. 304		
c. 31		c. 32		c. 34		c. 35		c. 36		28·5		. . . .
1–2	2<	1–2	2<	1–2	2<	1–2	2<	1–2	2<	1–2	2<	. . . .
—	—	—	—	6	—	—	—	—	—	—	—	1 . . .
—	—	15	—	—	—	—	—	—	3	—	—	2 . . .
—	—	—	—	—	+	7	—	18	—	—	—	3 . . .
—	—	15	—	6	+	7	—	18	3	—	—	. . . .
—	—	—	—	—	—	—	—	60	40	—	—	4 . . .
125	175	150	150	—	10	60	10	1 040	600	18	—	5 . . .
				—	—	—	—	—	20	—	—	6 . . .
—	—	—	—	—	—	—	—	—	—	18	—	7 . . .
—	—	—	—	—	—	—	—	—	—	—	—	8 . . .
—	—	—	—	—	—	—	—	—	—	—	—	9 . . .
—	—	—	—	—	—	—	—	—	—	—	—	10 . . .
—	—	—	—	—	—	—	—	—	—	—	8	11 . . .
—	—	30	10	—	—	—	—	—	—	—	—	12 . . .
50	25	—	—	—	—	—	—	—	10	35	23	13 . . .
—	—	—	—	—	—	—	—	—	—	—	—	14 . . .
—	—	—	—	—	—	—	—	—	—	—	—	15 . . .
—	—	—	—	—	—	—	—	—	—	—	—	16 . . .
—	—	—	—	—	—	—	—	—	—	—	—	17 . . .
—	8	—	—	—	—	—	—	—	—	—	8	18 . . .
—	—	—	—	—	—	—	—	—	—	—	—	19 . . .
—	—	—	—	—	—	—	—	—	—	—	—	20 . . .
—	+	+	+	20	—	—	—	—	—	—	—	21 . . .
—	—	—	—	—	—	—	—	—	—	—	—	22 . . .
—	—	15	—	—	—	—	—	20	—	—	—	23 . . .
—	—	30	—	—	—	—	—	40	—	18	—	24 . . .
—	—	—	—	—	—	—	—	—	—	—	—	25 . . .
—	—	—	—	—	—	—	—	—	—	—	—	26 . . .
—	—	—	—	—	—	—	—	—	—	35	—	27 . . .
—	—	—	—	—	—	—	—	—	—	—	8	28 . . .
—	—	—	—	—	—	—	—	—	—	—	—	29 . . .
—	—	—	—	—	10	—	—	—	—	—	—	30 . . .
—	—	—	—	—	—	—	—	—	10	—	—	31 . . .
175	208	225	160	20	20	60	10	1 160	680	124	47	. . . .

375

. . . .

Shell-beds from the sero-

348

	Kilarna		L u n d				Holkedals-kilen		S k ä l l e r ö d							
	p. 306		p. 315				p. 316		p. 317							
. . .	c. 22		c. 25·1		c. 25·6		25·9		c. 21·6		c. 22·6		c. 23·5		c. 23·8	
. . .	1—2	2<	1—2	2<	1—2	2<	1—2	2<	1—2	2<	1—2	2<	1—2	2<	1—2	2<
. . 1	—	—	8	—	65	—	15	—	—	—	—	—	—	—	—	—
. . 2	—	—	—	—	90	—	—	3	—	—	27	—	16	2	13	—
. . 3	17	3	32	—	8	10	10	—	5	—	27	3	13	—	—	—
. . .	17	3	40	—	163	10	25	3	5	—	54	3	29	2	13	—
. . 4	25	—	—	—	50	5	15	10	30	—	160	45	40	20	—	—
. . 5	250	200	300	100 }	} 850	170	150	220	60	45	1 800	230	810	160	—	35
. . 6	—	+ +	—	20 }					—	—	—	—	—	—	—	10
. . 7	13	+	—	—	—	—	—	10	—	—	45	—	40	—	—	—
. . 8	—	—	—	+	—	—	—	—	—	—	—	—	—	—	—	—
. . 9	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
. . 10	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
. . 11	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
. . 12 }	100	—	200	10	125	30	30	—	—	—	20	—	120	30	60	30
. . 13 }		40	—	—	—	—	—	20	—	—	120	10	—	—	140	60
. . 14	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
. . 15	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
. . 16	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
. . 17	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
. . 18 }	13	10	—	—	—	5	—	—	—	—	—	—	—	—	20 }	55
. . 19 }			—	—	—	—	15(?)	15(?)	15	—	40	—	60	—	— }	
. . 20	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
. . 21	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
. . 22	—	10	—	40	—	—	—	10	—	—	—	—	—	—	—	5
. . 23	38	—	100	—	125	—	15	—	45	—	60	—	—	—	—	—
. . 24	50	10	25	—	50	—	15	—	—	—	40	—	80	—	160	—
. . 25	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
. . 26	—	—	—	10	—	—	—	—	—	—	—	—	—	—	—	—
. . 27	63	20	—	—	25	—	—	—	—	—	20	—	—	—	—	—
. . 28	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
. . 29	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
. . 30	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
. . 31	—	—	—	—	125(?)	10	—	20	15	—	—	—	—	—	—	—
. . .	552	290	625	180	1 350	120	240	305	165	45	2 305	285	1 180	210	380	295

376

post-glacial regression

349

Prästängen p. 318		Lejonkällan p. 320		Torseröd p. 307						Sydkoster p. 322		Grandalen p. 323		
21		22		cc. 1·5		cc. 3·5		cc. 5·5		c. 15		c. 14		. . .
1–2	2<	1–2	2<	1–2	2<	1–2	2<	1–2	2<	1–2	2<	1–2	2<	. . .
21	—	—	—	5	—	—	—	10	—	—	—	—	—	1 . .
—	—	13	—	—	—	—	—	—	—	20	1	15	—	2 . .
98	3	—	—	60	—	30	—	45	—	—	—	30	—	3 . .
119	3	13	—	65	—	30	—	55	—	20	1	45	—	. . . .
} [1]1 000	60	—	—	45	15	45	5	90	30	—	3	—	—	4 . . .
	230	180	85	810	150	825	75	900	160	120 }	50	—	—	5 . . .
—	—	—	15	—	10	—	20	—	—	— }		—	50	6 . . .
20	—	—	—	—	5	15	10	5	—	—	—	—	—	7 . . .
—	—	—	—	—	—	—	—	—	—	—	—	—	—	8 . . .
—	—	—	—	—	—	—	—	—	—	—	—	—	—	9 . . .
—	—	—	—	—	—	—	—	—	—	—	—	—	—	10 . . .
—	—	—	—	—	—	—	—	—	—	—	—	—	—	11 . . .
60	40	280	45	45	30	45	40	45	—	180	15	—	—	12 . . .
—	15	60	23	45	25	15	—	150	10	—	3	120	10	13 . . .
—	—	—	—	—	—	—	—	—	—	—	—	—	20	14 . . .
—	—	—	—	—	—	—	—	—	—	—	—	—	—	15 . . .
—	—	—	—	—	—	—	—	—	—	—	—	—	—	16 . . .
—	—	—	—	—	—	—	—	—	—	—	—	—	—	17 . . .
—	—	80	5	180	60	30	20	30	—	—	5	—	—	18 . . .
—	—	—	10	—	—	—	—	—	5	—	—	—	—	19 . . .
—	—	—	—	—	—	—	—	—	—	—	—	—	—	20 . . .
—	—	—	—	—	—	—	—	—	—	—	—	—	—	21 . . .
—	—	—	—	—	—	—	—	—	—	—	—	—	+	22 . . .
40	—	20	—	15	—	15	—	—	—	30	—	40	—	23 . . .
—	—	280	—	180	5	150	—	—	—	90	—	80	—	24 . . .
—	—	—	—	—	—	—	—	—	—	—	—	—	—	25 . . .
—	—	40	8	—	—	—	—	—	—	30	3	—	—	26 . . .
20	—	—	—	30	10	—	5	30	—	—	—	120	20	27 . . .
—	—	—	—	—	—	—	—	—	—	—	—	—	—	28 . . .
—	—	—	—	—	5	15	5	—	—	—	—	—	—	29 . . .
—	—	—	—	—	—	—	—	—	—	—	—	—	—	30 . . .
40?	—	—	10	—	—	—	—	—	—	60	25	—	—	31 . . .
1 180	345	940	201	1 350	315	1 155	180	1 250	205	510	124	360	100	. . . .

377

. . . .

[1]*A. striata* and *A. patelliformis* inclusive.

Shell-beds from the sero-

350

	Tofterna A p. 308												Tofterna C p. 308	
. . .	2		3		4		5		6		7		c. 7·5	
. . .	1—2	2<	1—2	2<	1—2	2<	1—2	2<	1—2	2<	1—2	2<	1—2	2<
. . 1	133	—	113	—	42	—	25	—	38	3	—	—	13	2
. . 2	—	—	—	—	—	—	—	—	—	—	—	—	—	—
. . 3	333	—	271	—	100	1	200	2	175	3	42	—	—	—
. . .	466	—	384	—	142	1	225	2	213	6	42	—	13	2
. . 4	425	135	550	115	175	35	450	90	50	20	—	5	—	50
. . 5	5 000	650	3 750	600	2 125	225	3 250	575	750	150	25	65	240	370
. . 6	—	—	—	—	—	—	—	—	—	5	—	—	—	80
. . 7	—	—	—	5	—	—	—	10	—	—	—	—	20	5
. . 8	13	8	—	+	—	—	—	—	—	—	—	5	—	—
. . 9	—	—	—	—	—	—	—	—	—	—	—	—	—	—
. . 10	—	—	—	—	—	—	—	—	—	—	—	—	—	—
. . 11	—	—	—	—	—	—	—	—	—	—	—	—	—	—
. . 12 }	[1] 625	48	325	33	150	11	200	18	125	13	63	20	—	—
. . 13 }													—	—
. . 14	—	—	—	—	—	—	—	—	—	—	—	—	—	—
. . 15	—	—	—	—	—	—	—	—	—	—	—	—	—	—
. . 16	—	—	—	—	—	—	—	—	—	—	—	—	—	—
. . 17	—	5	—	—	—	—	—	—	—	—	—	5	—	—
. . 18	—	—	—	—	—	—	—	—	—	—	—	—	—	—
. . 19	—	—	—	—	—	—	—	—	—	—	—	—	—	—
. . 20	—	—	—	—	—	—	—	—	—	—	—	—	—	—
. . 21	—	+	13	—	—	—	—	—	50	—	13	—	—	—
. . 22	—	3	—	—	—	—	—	3	—	5	—	3	—	—
. 23	13	—	63	—	25	—	25	—	25	3	—	—	—	—
. 24	200	—	50	—	75	—	185	—	150	—	150	—	20	—
. 25	—	—	—	—	—	—	—	—	—	—	—	—	—	—
. 26	—	—	—	—	—	—	—	—	—	13	—	—	—	—
. 27	—	—	—	—	—	—	—	—	38	—	25	15	—	—
. 28	—	—	—	—	—	—	—	—	—	—	—	—	—	—
. 29	—	—	—	—	—	—	—	—	—	—	—	—	—	—
. 30	—	—	—	—	—	—	—	—	—	—	—	—	—	—
. 31	—	10	—	5	—	—	—	5	—	8	—	8	—	—
. .	6 276	859	4 751	758	2 550	271	4 110	701	1 188	217	276	126	280	505

378

[1] *C. fasciatum* inclusive.

post-glacial regression
351

Nötholmen A p. 310								Nötholmen B p. 310					Rössö-Långö A p. 313		
0·5		1·5		2·5		3·5		6·6		7·4	7·6		8·3		. . . .
1–2	2 <	1–2	2 <	1–2	2 <	1–2	2 <	1–2	2 <	2 <	1–2	2 <	1–2	2 <	. . . .
—	5?	17	—	—	1	3	—	33	—	—	8	—	—	—	1 . . .
—	—	—	—	—	—	—	—	17	—	—	33	—	—	—	2 . . .
—	—	—	—	—	—	—	—	50	2	2	8	2	—	—	3 . . .
—	5?	17	—	—	1	3	—	100	2	2	49	2	—	—	. . . .
—	85	160	40	60	35	40	25	25	—	—	—	—	—	—	4 . . .
810	490	1 700	210	1 260	330	960	215	200	320	80	} 100	120	—	—	5 . . .
+	+	10	8	10	115	+	10	—	20	10			—	10	6 . . .
—	—	—	3	—	5	—	—	—	5	—	—	—	—	—	7 . . .
—	15?	—	3	—	—	—	—	—	—	—	—	—	—	—	8 . . .
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	9 . . .
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	10 . . .
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	11 . . .
—	—	—	—	—	—	—	—	200	15	15	125	5	—	—	12 . . .
—	—	20	—	—	—	—	—	25	25	10	25	30	—	—	13 . . .
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	14 . . .
110	35	—	—	—	—	—	—	—	—	—	—	—	+	8	15 . . .
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	16 . . .
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	17 . . .
—	—	—	—	—	—	—	—	25?	—	10?	—	15	—	5	18 . . .
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	19 . . .
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	20 . . .
—	—	10	—	—	+	10	+	—	—	—	—	—	—	—	21 . . .
+	5	—	3	—	3	—	+	—	10	—	—	—	—	—	22 . . .
—	—	—	—	—	—	20	—	100	—	—	50	—	—	—	23 . . .
—	—	60	3	180	—	200	—	50	—	—	200	5	—	—	24 . . .
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	25 . . .
—	—	—	—	—	—		—	50	20	30	125	30	—	—	26 . . .
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	27 . . .
—	3	—	—	—	—	—	—	—	—	—	—	—	—	—	28 . . .
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	29 . . .
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	30 . . .
50	10	—	—	—	3	—	—	—	—	5	—	5	—	—	31 . . .
970	613	1 960	270	1 510	491	1 230	250	675	415	160	625	210	+	23	. . . .

Shell-beds from the sero-

352

	Rössö-Långö B p. 313				Svälte p. 325						Kjell-viken p. 326		Kebal p. 327		Baggeröd p. 328	
	8·3		8·7		c. 1·4		c. 3·4		c. 4		5·3		c. 1·5		0·2	
	1—2	2<	1—2	2<	1—2	2<	1—2	2<	1—2	2<	1—2	2<	1—2	2<	1—2	2<
1	—	—	—	—	—	—	13	2	5	—	—	—	—	—	7	—
2	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
3	—	—	—	—	—	1	40	—	15	—	7	—	58	—	40	—
	—	—	—	—	—	1	53	2	20	—	7	—	58	—	47	—
4	—	—	—	—	150	30	200	50	60	20	[1] 240	35	[1] 1 000	100	—	—
5	—	30	25	—	1 590	95	1 320	330	750	55		180		540	80	50
6	—		—	80	—		—	—	—	3	—	50				
7	—	—	—	—	30	3	60	5	—	—	—	—	—	—	—	—
8	—	—	—	—	—	—	—	5	—	—	—	—	—	10	—	—
9	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
10	—	—	—	—	—	—	—	—	—	—	—	—	—	+	—	—
11	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
12	—	5	125	10	150	5	60	5	270	55	200	30	25	—	—	—
13	—	10	—	—	—	—	—	—	—	—	—	—	—	—	80	60
14	—	—	—	—	15	—	—	—	—	—	—	—	—	—	—	—
15	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
16	—	—	—	—	—	+	—	—	—	8	—	—	—	—	—	—
17	—	—	—	—	—	—	—	—	—	3	—	—	—	—	—	—
18	25(?)	25(?)	—	—	—	—	—	—	—	—	20	—	—	—	—	10
19	—	—	—	—	—	3	—	—	—	—	—	—	—	—	—	—
20	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
21	—	—	25	+	—	—	—	—	—	—	—	—	—	—	—	25
22	—	—	—	—	—	—	—	—	—	15	—	—	—	—	—	—
23	—	—	—	—	30	—	40	—	150	—	20	—	—	—	—	—
24	100	—	100	—	—	—	60	—	45	3	60	—	—	—	40	5
25	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
26	—	—	50	5	—	—	—	—	—	—	—	—	—	—	—	—
27	75	—	—	—	—	—	—	—	—	3	40	—	—	—	80	15
28	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
29	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
30	—	—	—	—	—	—	—	—	—	3	—	—	—	—	—	—
31	—	—	—	—	—	—	—	—	—	—	—	5	—	20	—	—
	200	70	325	95	1 965	136	1 740	395	1 275	168	580	300	1 025	670	280	165

380

[1] *A. striata* inclusive.

post-glacial regression Recent

353 . . . . . . Continued from p.

Mörhult II p. 329		Nordkoster p. 330				Nöddö p. 331		Otterö B p. 315		Karholmen p. 332		Brattskär p. 333		Gullmaren p. 334			
c. 4·4		2·5		3		4·2		c. 5·5		0		0·3				. . . . . . Samples: height in *m* above the sea	
1—2	2<	1—2	2<	1—2	2<	1—2	2<	1—2	2<	1—2	2<	1—2	2<	1—2	2<	. . . . . . Coarseness of material in *mm*	
—	—	3	2	12	—	20?	+ ?	—	—	8(?)	—	16	—	6	1	. . . . . 1 *Lepidopleurus cinerus* L. (l)	
—	—	—	—	25	—	—	—	—	—	—	—	—	—	37	—	. . . . . 2 *Craspedochilus marginatus* Penn. (b)	
—	—	16	—	25	—	—	—	—	—	—	—	50	4	100	—	. . . . . 3 *Boreochiton ruber* Lowe (a)	fr
—	—	19	2	62	—	20?	+	—	—	8(?)	—	66	4	143	1	. . . . Amphineura: sum	
—	—	—	—	—	5	—	—	—	—	—	—	—	—	15 750	175	. . . . . 4 *Anomia aculeata* L. (b)	
20	70	60	125	50	170	20	30	—	—	50	15	200	120	—	315	. . . . . 5 » *ephippium* L. (b)	
—	50					—	10	—	5	—	—	—	—	—	—	. . . . . 6 *Ostrea edulis* L. (l)	
—	—	—	—	13	—	—	—	—	—	—	—	—	—	1 425	50	. . . . . 7 *Mytilus modiolus* L. (b)	
—	—	—	—	—	—	—	+	—	—	—	—	—	—	—	5	. . . . . 8 *Nucula nucleus* L. (l)	
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	. . . . . 9 » *sp.*	
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	. . . . . 10 *Cardium echinatum* L. (l)	
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	. . . . . 11 » *edule* L. (l)	
160	15	30	8	100	15	160	50	—	—	—	—	—	—	—	—	. . . . . 12 » *cf. nodosum* Turt. (b)	
—	—	—	—	25	10	80	20	—	—	—	—	—	20	—	—	. . . . . 13 » *cf. exiguum* Gmel. (l)	
—	—	—	—	—	—	—	—	—	—	—	—	—	—	75	—	. . . . . 14 » *cf. minimum* Phil. (b)	
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	. . . . . 15 » *sp.*	
—	—	—	—	—	—	—	—	—	—	—	—	—	10	—	—	. . . . . 16 *Laevicardium norvegicum* Spengel (l)	
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	. . . . . 17 *Cyprina islandica* L. (b)	
—	—	—	—	—	—	80	70	—	—	—	—	—	10	—	—	. . . . . 18 *Tapes aureus* Gmel. (l)	
—	—	—	—	13	—	—	—	—	—	25	—	—	—	—	—	. . . . . 19 » *virgineus* L. (l)	
—	—	—	—	—	—	—	—	—	—	—	—	—	10	—	—	. . . . . 20 » *pullastra* Mont. (b)	
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	. . . . . 21 » *sp.*	
—	—	—	8	—	—	—	—	—	5	—	—	—	—	—	—	. . . . . 22 *Lucina borealis* L. (b)	
40	—	100	—	100	—	20	—	—	—	—	—	50	—	75	—	. . . . . 23 *Lepton nitidum* Turt. (l)	
120	—	60	8	175	—	—	—	15	—	50	—	25	—	190	—	. . . . . 24 *Montacuta bidentata* Mont. (l)	
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	. . . . . 25 *Scrobicularia piperata* Bell. (l)	
—	—	—	8	—	25	—	—	—	—	—	—	—	—	—	—	. . . . . 26 *Abra cf. alba* Wood (l)	
40	5	10	—	50	—	20	15	45	5	38	—	—	—	—	—	. . . . . 27 » *sp.*	
—	—	—	—	—	—	—	5	—	—	—	—	—	50	—	—	. . . . . 28 *Macoma baltica* L. (b)	fr
—	5	—	—	—	—	—	—	—	—	—	—	—	—	—	—	. . . . . 29 » *sp.*	
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	. . . . . 30 *Solen ensis* L. (b)	
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	5	. . . . . 31 *Thracia villosiuscula* Macg. (b)	
380	145	260	157	526	225	380	200	60	15	163	15	275	220	17 515	550	. . . . Pelecypoda: sum	

Fini-glacial regressional immigrants

381 . . . . . . Continued on p.

Shell-beds from the primo-post-glacial re-

Continued from p. 354

		Nyckleby p. 284				Mörhult I p. 285						Summinge p. 286		Lunnevik I p. 287		→			
	Samples: height in *m* above the sea	c. 22·3		c. 22·6		c. 9		c. 10		c. 12		10		c. 17		c. 2		c. 3	
	Coarseness of material in *mm*	1—2	2<	1—2	2<	1—2	2<	1—2	2<	1—2	2<	1—2	2<	1—2	2<	1—2	2<	1—2	2<
Uni-glacial regressional immigrants	1 *Patella vulgata* L. (b)	—	—	—	—	—	—	—	20	—	—	—	—	—	20	—	—	—	+
fr	2 *Tectura virginea* Müll. (b)	390	230	250	280	200	130	440	300	320	150	390	240	150	70	180	60	120	225
	3 *Gibbula cineraria* L. (b)	210	50	300	100	120	50	280	20	320	45	210	80	210	40	150	20	180	45
	4 › *tumida* Mont. (b)	—	10	—	—	—	—	—	40	—	—	—	40	—	—	—	—	—	—
	5 *Lunatia intermedia* Phil. (l)	60	10	50	—	40	—	40	—	40	30	—	10	90	10	—	—	30	—
	6 *Litorina obtusata* L. (b)	—	—	—	—	—	10	80	—	40	—	—	—	—	—	30	10	—	—
	7 *Hydrobia ulvae* Penn. (b)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	8 *Onoba striata* Mont. (b)	1 350	—	3 000	—	80	—	880	—	1 120	—	480	—	600	—	360	—	390	—
	9 › *aculeus* Gould. (b)	—	—	—	—	—	—	—	—	80	—	—	—	120	—	30	—	60	—
	10 *Rissoa interrupta* Ad. (b)	2 850	—	3 250	—	720	—	3 800	—	5 200	—	1 710	—	3 900	—	3 750	—	4 050	—
	11 *Rissostomia membranacea* Ad. (l)	—	—	—	5	—	—	—	40	—	—	—	—	—	—	—	—	—	—
	12 *Skenea planorbis* Fabr. (b)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	30	—	—	—
	13 *Aporrhais pes pelecani* L. (l)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	14 *Parthenia spiralis* Mont. (l)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	15 *Clathurella linearis* Mont. (l)	150	—	—	5	—	10	40	—	—	—	30	—	—	—	60	—	—	—
	16 *Pylotropa lapillus* L. (b)	—	—	—	5	40	10	160	60	160	15	—	—	30	30	+	20	120	30
	17 *Nassa reticulata* L. (l)	—	—	—	—	—	—	—	—	—	—	—	—	80	10	—	—	—	—
	18 › *incrassata* Ström (b)	—	20	—	—	—	—	—	—	—	—	—	10	+	10	—	—	—	—
	19 › *sp.*	180	—	250	30	40	10	80	20	80	15	+	—	—	—	—	20	—	—
fr	20 *Utriculus umbilicatus* Mont. (l)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	Gastropoda: sum	5 190	320	7 100	425	1 240	220	5 800	500	7 360	255	2 820	380	5 180	190	4 590	130	4 950	300
	21 *Amphidetus sp.*	+	+	—	+	—	—	+	+	40	—	—	—	+	+	—	—	—	—
prt	22 *Lophyrus albus* L.* (a)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Primo-post-glacial regressional and post-glacial transgressional immigrants	23 *Anomia patelliformis* L. (l)	—	—	—	—	—	10	—	20	—	—	—	20	+		—	10	—	15
	24 › *striata* Brocchi (l)	—	60	—	20	—	—	—	10	—	—	—	—	+	35	—	5	—	8
	25 *Pecten varius* L. (l)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	26 › *septemradiatus* Müll. (b)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	27 › *tigrinus* Müll. (b)	—	—	—	—	—	—	—	—	—	—	—	+	—	—	—	—	—	—
	28 *Vola maxima* L. (l)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	29 *Modiolaria discors* L. (b)	45	—	—	3	—	—	20	—	—	—	—	—	—	5	30	—	30	15
	30 *Nucula tumidula* Malm (b)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	31 *Portlandia sp.* (*cf. tenuis* Phil.)	—	—	—	—	—	—	—	—	—	—	15	—	—	—	—	—	—	—
	32 *Cardium cf. fasciatum* Mont. (b)	+	10	—	10	—	—	—	—	—	—	—	—	90	15	—	10	—	—

Continued on p. 382

gression and the post-glacial transgression

355

Otterö A										Fjällbacka						
← p. 271										p. 276				Over!		
c. 4		c. 5		c. 6		c. 7		c. 7·7		cc. 16·3		cc. 16·8		cc. 17·3		. . . .
1—2	2<	1—2	2<	1—2	2<	1—2	2<	1—2	2<	1—2	2<	1—2	2<	1—2	2<	. . . .
—	—	—	—	—	—	—	—	—	—	—	10	40	10	60	—	1 . . .
210	260	320	20	300	40	200	60	—	70	360	90	210	30	270	120	2 . . .
420	90	1 200	20	90	20	250	100	120	130	150	20	160	45	420	90	3 . . .
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	4 . . .
—	—	40	—	—	—	50	—	60	60	30	—	40	15	30	15	5 . . .
—	—	—	—	—	—	—	—	—	—	—	—	—	15	60	15	6 . . .
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	7 . . .
1 590	—	2 280	—	1 440	—	250	—	750	—	90	—	480	—	510	—	8 . . .
60	—	560	—	210	—	250	—	300	—	60	—	120	—	21	—	9 . . .
8 100	—	17 200	—	11 400	—	5 500	—	5 550	—	4 350	—	6 000	—	9 000	—	10 . . .
—	—	—	—	—	—	—	—	120	60	—	—	—	—	—	—	11 . . .
—	—	—	—	30	—	50	—	—	—	—	—	—	—	—	—	12 . . .
—	—	—	—	—	—	—	—	—	—	—	—	—	15	—	—	13 . . .
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	14 . . .
—	—	—	—	—	—	—	—	—	—	—	—	+	—	—	—	15 . . .
90	60	120	10	30	+	—	—	—	40	120	30	+	45	120	+	16 . . .
—	—	—	—	—	—	—	—	—	50	—	—	—	—	—	—	17 . . .
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	18 . . .
60	—	—	—	30	—	—	20	30	—	60	10	—	—	30	—	19 . . .
—	—	—	—	—	—	—	—	—	—	—	—	40	—	—	—	20 . . .
10 530	410	21 722	50	13 530	60	6 550	180	6 930	410	5 220	160	7 120	180	10 710	240	. . . .
—	—	—	—	—	+	—	—	—	—	—	—	—	—	—	—	21 . . .
—	—	—	—	—	+	—	—	—	—	—	—	—	—	—	—	22 . . .
—	20	—	—	30	15	—	—	—	—	—	—	—	—	—	—	23 . . .
—	—	—	5	—	—	—	—	—	5	—	—	—	—	—	—	24 . . .
—	—	—	—	—	—	—	—	—	+	—	—	—	—	—	—	25 . . .
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	26 . . .
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	27 . . .
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	28 . . .
—	5	100	100	210	75	250	100	60	15	—	—	—	+	15	15	29 . . .
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	30 . . .
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	31 . . .
—	5	—	—	—	—	—	—	15	10	—	—	—	—	—	—	32 . . .

383

Shell-beds from the post-

356

	Fjällbacka										Löndal					
	Over!				p. 276						p. 288					
. . . . .	cc. 17·8		cc. 18·3		cc. 19·3		cc. 19·8		cc. 20		cc. 9·5		cc. 11·5		cc. 13·5	
. . . . .	1—2	2<	1—2	2<	1—2	2<	1—2	2<	1—2	2<	1—2	2<	1—2	2<	1—2	2<
. . . . 1	—	—	—	—	—	—	—	—	—	—	—	—	—	10	—	15
. . . . 2	330	50	150	40	90	20	60	—	—	10	80	75	200	20	160	30
. . . . 3	540	30	210	30	+	30	+	+	60	5	400	15	280	50	+	45
. . . . 4	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
. . . . 5	30	10	30	—	90	—	150	—	—	—	40	15	40	20	—	15
. . . . 6	30	—	30	—	—	—	—	—	—	—	—	—	—	—	—	—
. . . . 7	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
. . . . 8	1 290	—	1 950	—	600	—	420	—	60	—	720	—	1 840	—	160	—
. . . . 9	60	—	450	—	180	—	60	—	60	—	—	—	360	—	40	—
. . . . 10	10 200	—	15 000	—	5 250	—	5 100	—	750	—	4 400	—	6 200	—	1 320	—
. . . . 11	—	—	—	—	—	10	90	110	—	15	—	15	40	70	40	15
. . . . 12	120	—	120	—	—	—	—	—	—	—	40	—	—	—	—	—
. . . . 13	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
. . . . 14	—	—	—	—	60	—	—	—	—	—	—	—	—	—	—	—
. . . . 15	—	—	+	10	—	—	30	—	—	—	—	—	—	—	40	—
. . . . 16	210	+	150	+	30	—	—	+	—	—	40	45	80	—	—	+
. . . . 17	—	—	—	+	—	—	—	5	—	15	—	—	—	10	—	15
. . . . 18	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
. . . . 19	90	—	—	—	—	—	120	20	30	—	80	—	40	—	40	—
. . . . 20	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
. . . . .	12 900	90	18 090	80	6 300	60	6 030	135	960	45	800	165	9 080	180	1 800	135
. . . . 21	—	—	—	—	—	—	—	—	—	—	—	—	+	+	+	+
. . . . 22	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
. . . . 23	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
. . . . 24	—	—	—	5	—	—	—	—	—	—	—	—	—	—	—	—
. . . . 25	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
. . . . 26	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
. . . . 27	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
. . . . 28	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
. . . . 29	—	—	15	10	75	10	30	—	—	—	—	—	100	15	20	—
. . . . 30	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
. . . . 31	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
. . . . 32	—	—	—	5	—	—	—	—	—	—	—	—	—	—	—	—

384

glacial transgression

357

Otterö B p. 271						Hvalö p. 289				Mörhult II p. 290				
c. 3·8		c. 4·5		c. 5·2		c. 3		c. 5		c. 3·3		c. 4		
1—2	2<	1—2	2<	1—2	2<	1—2	2<	1—2	2<	1—2	2<	1—2	2<	
—	—	—	—	—	—	—	—	—	—	—	10	—	—	1 . . . .
180	105	60	20	180	20	650	300	1 150	100	—	—	—	—	2 . . . .
300	95	360	50	330	10	350	80	50	70	30	+	+	30	3 . . . .
—	—	—	—	—	—	—	—	—	—	—	—	—	—	4 . . . .
—	—	120	20	150	30	—	20	50	10	—	5	—	—	5 . . . .
—	—	—	—	—	—	—	—	—	—	—	—	—	—	6 . . . .
—	—	—	—	—	—	—	—	—	—	—	—	—	—	7 . . . .
1 050	—	390	—	750	—	2 000	—	1 850	—	60	—	440	—	8 . . . .
90	—	—	—	90	—	200	—	150	—	—	—	120	—	9 . . . .
5 100	—	1 020	—	4 500	—	5 000	—	4 000	—	60	—	920	—	10 . . . .
—	15	—	45	—	60	—	—	—	—	—	—	—	10	11 . . . .
—	—	—	—	—	—	—	—	—	—	—	—	—	—	12 . . . .
—	—	—	—	—	—	—	—	—	—	—	—	—	—	13 . . . .
—	—	—	—	—	—	—	—	—	—	—	—	—	—	14 . . . .
—	—	—	10	—	10	—	—	150	—	—	—	—	—	15 . . . .
90	10	60	—	30	10	—	10	—	—	—	+	—	10	16 . . . .
—	5	—	5	—	20	—	—	—	—	—	—	—	70	17 . . . .
—	—	—	—	—	—	—	—	—	—	—	—	—	—	18 . . . .
30	—	120	40	270	100	—	—	50	10	—	+	120	—	19 . . . .
60	—	30	—	30	—	—	—	—	—	—	—	—	—	20 . . . .
6 900	230	2 160	190	6 330	260	8 200	410	7 450	190	150	15	1 600	120	. . . .
—	+	—	—	—	—	—	—	—	—	—	—	—	—	21 . . . .
—	—	—	—	—	—	—	—	—	—	—	—	—	—	22 . . . .
—	—	—	—	—	—	} +	80	+	70	{ —	—	—	—	23 . . . .
—	18	—	10	—	—					—	30	—	20	24 . . . .
—	—	—	13	—	5	—	5	25	10	—	—	—	—	25 . . . .
—	+	—	—	—	—	—	—	—	—	—	—	—	—	26 . . . .
—	—	—	—	—	—	—	—	—	—	—	—	—	—	27 . . . .
—	—	—	—	—	—	—	—	—	—	—	—	—	—	28 . . . .
60	33	—	—	—	—	—	—	—	—	—	—	—	—	29 . . . .
—	—	—	—	—	—	—	—	—	—	—	—	—	5	30 . . . .
—	—	—	—	—	—	—	—	—	—	—	—	—	—	31 . . . .
—	—	—	—	—	—	25	—	200	15	—	—	—	—	32 . . . .

385

Shell-beds from the post-glacial transgression

358

	Rössö-Långö A p. 279				Rössö-Långö C p. 279				Torse-röd p. 281		Smittmyren p. 291				Fjälla p. 282		N. Holt p. 283	
. . . .	7		7·9		7		7·8		cc. 0.5		30·6		30·9		31		c. 31·5	
. . . .	1–2	2<	1–2	2<	1–2	2<	1–2	2<	1–2	2<	1–2	2<	1–2	2<	1–2	2<	1–2	2<
. . . . 1	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	10
. . . . 2	325	45	225	40	225	55	325	70	150	100	60	30	90	60	—	—	10	120
. . . . 3	125	40	275	15	25+	25+	200	20+	300	50	60	30	240	150	12	+	315	80
. . . . 4	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
. . . . 5	50	—	75	5	50	10	100	10	—	—	—	—	—	—	—	—	35	—
. . . . 6	—	—	—	—	—	—	—	—	30	—	—	—	—	10	—	—	—	—
. . . . 7	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	10
. . . . 8	475	—	275	—	400	—	400	—	570	—	1 350	—	1 410	—	—	—	1 680	—
. . . . 9	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	70	—
. . . . 10	125	—	175	—	225	—	200	—	3 750	—	6 900	—	6 480	—	—	—	5 250	90
. . . . 11	—	—	—	—	—	—	—	—	—	20	—	—	—	—	—	—	—	30
. . . . 12	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
. . . . 13	—	—	—	—	—	+	—	—	—	—	—	—	—	—	—	6	—	—
. . . . 14	—	—	—	—	—	—	—	—	30	—	—	—	—	—	—	—	—	—
. . . . 15	25	—	—	—	+	—	—	—	—	20	—	—	—	—	—	—	35	10
. . . . 16	—	—	—	—	—	—	—	—	60	20	—	—	—	10	—	—	—	+
. . . . 17	—	+	—	—	75	30	150	45	—	10	—	—	—	10	—	—	—	60
. . . . 18	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
. . . . 19	125	40	75	25	—	—	—	—	30	—	—	—	—	—	—	—	280	—
. . . . 20	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	70	—
. . . .	1 250	125	1 100	85	1 000	120	1 375	145	4 920	220	8 370	60	8 220	240	12	6	7 745	410
. . . . 21	—	—	—	—	—	—	—	—	—	—	—	—	+	—	—	—	—	—
. . . . 22	—	—	—	—	—	—	8	+	—	—	—	—	—	—	—	—	—	—
. . . . 23	—	—	—	—	—	—	—	3	—	—	—	—	—	—	—	3	—	—
. . . . 24	—	5	—	3	—	30	—	—	—	—	—	5	—	15	—	—	—	—
. . . . 25	—	+	+	+	—	10	—	+	—	—	—	—	—	—	—	+	—	—
. . . . 26	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
. . . . 27	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	3	—	—
. . . . 28	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
. . . . 29	—	—	—	—	—	—	—	—	—	—	30	25	30	30	—	—	—	5
. . . . 30	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
. . . . 31	13	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
. . . . 32	50	13	50	5	13	15	—	—	—	—	—	—	—	—	24	12	—	—

386

Shell-beds from the post-glacial transgression maximum

359

Medvik A p. 292		Medvik B p. 292				Lunnevik II p. 294										
c. 26		c. 29		c. 31		c. 27·2		c. 28·5		c. 30		c. 32·5		c. 34		. . . . .
1—2	2<	1—2	2<	1—2	2<	1—2	2<	1—2	2<	1—2	2<	1—2	2<	1—2	2<	. . . . .
—	5	—	10	—	12	—	5	—	5	—	—	—	5	—	15	1 . . . .
35	—	225	175	30	78	300	170	140	70	160	80	40	45	120	25	2 . . . .
455	50	200	40	150	69	100	20	160	35	120	20	40	45	280	15	3 . . . .
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	4 . . . .
70	—	—	—	—	—	60	15	40	20	20	5	60	5	20	—	5 . . . .
105	30	50	60	60	32	—	—	—	10	40	5	20	—	—	10	6 . . . .
—	—	—	—	—	—	20	—	20	—	—	—	—	—	—	—	7 . . . .
770	—	250	—	240	—	380	—	480	—	540	—	440	—	520	—	8 . . . .
175	—	200	—	150	—	—	—	—	—	—	—	—	—	—	—	9 . . . .
4 585	—	3 125	—	1 440	—	2 100	—	2 900	—	2 500	—	2 200	—	480	—	10 . . . .
—	20	—	—	—	—	—	5	80	5	40	10	—	—	—	—	11 . . . .
—	—	50	—	—	—	+	—	—	—	—	—	—	—	+	—	12 . . . .
—	+	—	—	—	—	—	5	—	—	20	—	—	—	20	—	13 . . . .
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	14 . . . .
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	15 . . . .
105	+	—	35	30	30	+	5+	40	15	—	5+	60	20	60	35	16 . . . .
—	—	—	—	—	40	—	—	—	—	—	—	—	20	—	—	17 . . . .
—	—	—	—	—	—	—	—	—	25	—	25	—	—	—	—	18 . . . .
—	—	—	—	140	—	440	20	100	—	140	—	80	—	—	—	19 . . . .
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	20 . . . .
6 200	105	4 100	320	2 240	261	3 400	245	3 960	185	3 580	150	2 940	140	1 500	100	. . . . .
—	—	+	—	—	—	+	—	+	+	+	+	+	+	—	+	21 . . . .
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	22 . . . .
—	—	—	15	—	—	—	45	—	10	—	20	10	3	30	13	23 . . . .
—	—	—	2	—	—	—	—	—	—	—	3	—	10	—	—	24 . . . .
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	25 . . . .
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	26 . . . .
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	27 . . . .
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	28 . . . .
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	29 . . . .
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	30 . . . .
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	31 . . . .
—	—	—	—	—	—	—	—	—	—	—	16	—	—	—	—	32 . . . .

387

Shell-beds from the post-glacial

360

	Rössö p. 296										Hällan p. 297		Hälle I p. 298	
	c. 21		c. 21·7		c. 22·2		c. 23·3		c. 23·6		c. 36·5		c. 39	
	1–2	2<	1–2	2<	1–2	2<	1–2	2<	1–2	2<	1–2	2<	1–2	2<
1	—	—	—	—	—	—	—	—	—	5	—	—	—	—
2	250	55	150	30	100	35	125	35	625	145	50	7	50	[illegible]
3	275	15	300	10	75	30	150	35	625	60	100	+	250	25
4	—	—	—	—	—	—	—	—	—	—	—	—	—	—
5	50	5	75	10	50	—	50	—	50	10	50	—	—	—
6	—	—	—	—	—	—	—	—	25	—	—	—	50	1[illegible]
7	—	—	—	—	—	—	—	—	375	15	—	—	350	—
8	425	—	500	—	275	—	500	—	900	—	500	—	250	—
9	25	—	25	—	75	—	125	—	125	—	200	—	—	—
10	2 500	—	4 125	—	1 750	—	3 500	—	8 250	—	1 750	—	1 250	—
11	—	—	—	—	—	—	—	—	25	5	—	—	50	1[illegible]
12	—	—	—	—	+	—	—	—	+	—	—	—	—	—
13	—	—	—	—	—	—	—	—	—	—	—	—	—	—
14	—	—	—	—	—	—	—	—	—	—	—	—	—	—
15	—	—	—	—	—	—	—	—	—	—	—	—	—	—
16	25	5	—	—	—	+	—	—	—	15	—	—	—	[illegible]
17	—	—	—	—	—	—	—	—	—	15	—	+	—	[illegible]
18	—	5	—	5	—	—	—	—	—	—	—	—	—	—
19	50	—	—	—	50	—	+	+	25	—	—	—	50	1[illegible]
20	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	3 600	85	5 175	55	2 375	65	4 450	70	11 025	270	2 650	7	2 300	7[illegible]
21	+	+	+	+	+	+	+	+	+	+	+	—	+	+
22	—	—	—	—	—	—	—	—	—	—	—	—	—	—
23	13	20	75	20	100	25	—	5	—	5	—	—	—	—
24	—	3	—	—	—	3	—	—	—	3	—	—	—	—
25	—	—	—	—	—	—	—	—	—	—	—	—	—	—
26	—	—	—	—	—	—	—	—	—	—	—	—	—	—
27	—	—	—	—	—	—	—	—	—	—	—	—	—	—
28	—	—	—	—	—	—	—	—	—	—	—	—	—	—
29	25	—	25	20	+	10	125	13	—	3	25	—	—	—
30	—	—	—	—	—	—	—	—	—	—	—	—	—	—
31	—	—	—	—	—	—	—	—	+	—	—	—	—	—
32	—	—	—	3	—	—	—	—	—	—	—	—	—	—

388

transgression maximum

361

Stare p. 302				Sandbogen p. 303						Efvenås p. 304		
c. 31		c. 32		c. 34		c. 35		c. 36		28·5		
1–2	2<	1–2	2<	1–2	2<	1–2	2<	1–2	2<	1–2	2<	
—	5	—	—	—	60	—	—	—	—	—	—	1 . . . .
—	—	—	20	120	260	40	40	200	—	—	15	2 . . . .
+	+	+	10	240	160	240	80	40	40	+	+	3 . . . .
—	—	—	—	—	—	—	—	—	—	—	—	4 . . . .
—	—	30	—	—	—	80	—	120	—	—	—	5 . . . .
—	10	—	10	—	100	—	—	—	—	—	—	6 . . . .
—	—	—	—	—	—	—	—	—	—	—	105	7 . . . .
275	—	30	—	280	—	80	—	800	—	—	—	8 . . . .
150	—	90	—	—	—	—	—	120	—	—	70	9 . . . .
1 875	—	900	—	1 480	—	4 200	—	5 000	—	—	—	10 . . . .
200	135	150	—	—	—	40	20	—	—	35	—	11 . . . .
—	—	—	—	—	—	—	—	40	—	—	—	12 . . . .
—	—	—	—	—	—	—	—	—	—	—	—	13 . . . .
25	—	—	—	—	—	—	—	40	—	—	—	14 . . . .
—	—	—	—	—	—	—	—	—	—	—	—	15 . . . .
—	—	—	—	+	40	+	+	40	20	—	—	16 . . . .
25	115	—	10	—	—	—	—	—	—	70	15	17 . . . .
—	—	—	—	—	—	—	—	—	—	—	—	18 . . . .
—	—	30	—	80	+	160	—	40	40	—	—	19 . . . .
—	—	—	—	—	—	—	—	—	—	—	—	20 . . . .
2 550	265	1 231	50	2 200	620	4 840	140	6 440	100	105	205	. . . . .
—	—	—	—	—	—	—	—	—	—	—	+	21 . . . .
—	—	—	—	—	—	—	—	—	—	—	—	22 . . . .
—	—	—	—	—	—	—	—	—	—	—	—	23 . . . .
—	—	—	—	—	—	—	—	—	20	—	—	24 . . . .
—	—	—	—	—	—	—	—	—	—	—	—	25 . . . .
—	—	—	—	—	—	—	—	—	—	—	—	26 . . . .
—	—	—	—	—	—	—	—	—	—	—	—	27 . . . .
—	—	—	—	—	—	—	—	—	—	—	—	28 . . . .
—	—	—	—	—	—	—	—	—	—	—	—	29 . . . .
—	—	—	—	—	—	—	—	—	—	—	—	30 . . . .
—	—	—	—	—	—	—	—	—	—	—	—	31 . . . .
—	—	—	—	—	—	—	—	—	—	—	—	32 . . . .

389

Shell-beds from the sero-

362

	Kilarna p. 306		Lund p. 315				Holkedalskilen p. 316		Skälleröd p. 317							
. . . .	c. 22		c. 25·1		c. 25·6		25·9		c. 21·6		c. 22·6		c. 23·5		c. 23·8	
. . . .	1—2	2<	1—2	2<	1—2	2<	1—2	2<	1—2	2<	1—2	2<	1—2	2<	1—2	2<
. . . . 1	—	—	—	—	—	—	—	10	—	—	—	—	—	—	—	—
. . . . 2	225	180	250	180	350	170	240	130	—	30	120	60	160	30	80	40
. . . . 3	125	120	150	80	350	90	150	70	60	10	280	20	80	20	40	20
. . . . 4	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
. . . . 5	—	40	100	20	250	10	30	30	—	15	80	20	—	10	—	30
. . . . 6	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
. . . . 7	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
. . . . 8	700	20	1 000	—	2 250	—	270	—	210	—	1 720	—	3 200	—	280	—
. . . . 9	—	—	—	—	—	—	—	—	—	—	80	—	—	—	—	—
. . . . 10	2 500	—	1 000	—	5 000	—	1 050	—	660	—	6 200	—	12 000	10	2 400	—
. . . . 11	—	—	—	40	50	10	—	40	—	—	160	80	520	30	—	160
. . . . 12	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
. . . . 13	—	—	—	+	—	—	—	—	—	—	—	—	—	—	—	—
. . . . 14	25	—	50	—	—	—	—	—	—	—	—	—	80	—	—	—
. . . . 15	—	20	—	20	100	—	—	20	—	—	—	—	—	—	—	—
. . . . 16	25	—	—	+	—	—	—	10	—	—	40	10	—	—	80	—
. . . . 17	—	+	—	+	—	—	—	80	—	—	—	+	—	—	—	10
. . . . 18	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
. . . . 19	100	40	250	20	150	—	150	—	30	5	120	30	160	10	160	100
. . . . 20	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
. . . .	3 700	420	2 800	360	8 500	280	1 890	390	960	60	8 800	220	16 200	110	3 040	360
. . . . 21	—	—	—	—	+	+	—	—	—	—	—	+	—	—	—	—
. . . . 22	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
. . . . 23	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
. . . . 24	—	40	—	10	25	20	15	40	—	—	—	—	—	—	—	—
. . . . 25	—	—	—	—	—	+	—	+	—	—	—	—	—	—	—	—
. . . . 26	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
. . . . 27	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
. . . . 28	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
. . . . 29	—	—	—	—	—	—	—	—	30	—	80	—	20	—	—	—
. . . . 30	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
. . . . 31	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
. . . . 32	—	—	—	—	25	—	—	—	—	—	—	—	—	—	—	—

. . . . 390

post-glacial regression

363

Präst-ängen p. 318		Lejon-källan p. 320		Torseröd p. 307						Syd-koster p. 322		Gran-dalen p. 323		
21		22		cc. 1·5		cc. 3·5		cc. 5·5		c. 15		c. 14		. . . .
1–2	2<	1–2	2<	1–2	2<	1–2	2<	1–2	2<	1–2	2<	1–2	2<	. . . .
—	—	—	—	—	—	—	—	—	—	—	—	—	—	1 . . .
480	160	80	20	180	60	180	30	360	20	—	20	560	60	2 . . .
240	40	280	95	60	70	150	10	330	40	240	60	80	120	3 . . .
—	—	—	—	—	—	—	—	—	—	—	—	—	—	4 . . .
120	—	80	10	—	10	60	—	—	—	240	20	80	—	5 . . .
—	—	—	—	—	—	—	—	—	—	—	—	—	20	6 . . .
—	—	—	—	120	—	—	—	150	—	—	—	—	—	7 . . .
1 200	—	800	—	780	—	1 050	—	1 800	—	120	—	560	—	8 . . .
—	—	—	—	—	—	120	—	330	—	120	—	160	—	9 . . .
3 440	—	1 000	—	3 600	—	6 900	—	11 580	—	1 640	—	960	—	10 . . .
—	10	40	150	—	40	—	—	—	50	—	10	—	20	11 . . .
—	—	—	—	—	—	30	—	—	—	—	—	—	—	12 . . .
—	—	—	—	—	10	—	—	—	—	—	—	—	—	13 . . .
—	—	—	—	—	—	—	—	90	—	—	—	—	—	14 . . .
40	—	40	5	—	—	—	—	30	—	—	—	—	—	15 . . .
—	—	—	—	120	20	180	—	150	20	—	5	—	—	16 . . .
—	—	—	40	—	90	—	—	—	50	120	20	—	+	17 . . .
—	—	—	—	—	—	—	—	—	—	—	+	—	—	18 . . .
—	—	160	—	30	—	90	—	150	—	—	—	240	40	19 . . .
—	—	—	—	—	—	—	—	—	—	—	—	—	—	20 . . .
5 520	210	2 480	420	4 890	300	8 760	40	14 970	180	2 480	135	2 640	260	. . . .
+	+	+	—	—	—	—	+?	—	—	—	—	—	—	21 . . .
—	—	—	—	—	—	—	—	—	—	—	—	—	—	22 . . .
—	—	—	—	—	5	—	5	—	—	—	—	—	—	23 . . .
+	20	20	15	—	—	—	—	—	—	—	13	—	—	24 . . .
—	+	—	5	—	+	—	—	—	+	—	3	—	10	25 . . .
—	—	—	—	—	—	—	—	—	—	—	—	—	—	26 . . .
—	—	—	—	—	—	—	—	—	—	—	—	—	—	27 . . .
—	—	—	—	—	—	—	—	—	—	—	—	—	—	28 . . .
—	—	—	—	—	—	—	—	—	—	—	—	—	—	29 . . .
—	—	—	—	—	—	—	—	—	—	—	—	—	—	30 . . .
—	—	—	—	—	—	—	—	—	—	—	—	—	—	31 . . .
—	—	—	—	—	—	—	—	—	—	—	—	—	—	32 . . .

391

Shell-beds from the sero-

364

. . .	Tofterna A p. 308												Tofterna C p. 308	
. . .	2		3		4		5		6		7		c. 7·5	
. . .	1—2	2<	1—2	2<	1—2	2<	1—2	2<	1—2	2<	1—2	2<	1—2	2<
. . 1	—	—	—	—	—	—	—	—	—	—	—	—	—	—
. . 2	2 625	440	2 600	340	1 675	195	1 075	205	375	75	225	70	40	140
. . 3	1 400	35	1 375	25	675	20	800	65	725	55	425	40	40	30
. . 4	—	—	—	—	—	—	—	—	—	—	—	—	—	10
. . 5	500	20	75	—	75	—	25	10	125	25	475	5	—	10
. . 6	—	—	—	—	—	—	—	—	—	—	—	—	—	
. . 7	—	—	—	—	—	—	—	—	—	—	—	—	—	—
. . 8	2 750	—	2 000	—	1 875	—	2 700	—	1 425	—	2 125	—	200	—
. . 9	—	—	125	—	150	—	225	—	525	—	275	—	—	—
. . 10	c. 87 500	—	c. 56 250	—	c. 57 500	—	23 750	—	13 750	—	5 625	—	2 000	—
. . 11	—	—	—	—	—	—	—	—	—	25	—	10	—	—
. . 12	—	—	—	—	—	—	15	—	100	—	25	—	—	—
. . 13	—	—	—	—	—	—	—	—	—	—	25	5	—	+
. . 14	—	—	—	—	—	—	—	—	—	—	—	—	—	—
. . 15	25	5	75	5	25	5	50	—	—	—	50	—	—	10
. . 16	—	—	+	+	+	—	—	+	50	—	100	+	—	—
. . 17	—	—	—	—	—	—	—	—	—	5	—	—	—	—
. . 18	—	100	—	60	—	—	—	—	—	5	—	—	—	10
. . 19	1 750	—	925	—	450	+	425	5	250	—	200	25	40	—
. . 20	—	—	—	—	—	—	—	—	—	—	—	—	—	—
. . .	96 550	600	63 425	430	62 425	220	29 065	285	17 325	190	9 550	155	2 320	210
. . 21	+	+	+	+	+	+	+	+	+	+	—	—	—	—
. . 22	8	—	—	—	—	—	—	—	—	—	—	—	—	—
. . 23	50	155	13	80	25	35	13	35	—	3	—	5	—	—
. . 24	—	10	—	+	—	3	—	—	—	13	—	—	—	120
. . 25	—	—	—	—	—	—	—	—	—	+	—	—	—	15
. . 26	—	—	—	+	—	—	—	—	—	—	—	—	—	—
. . 27	—	3	—	+	—	—	—	—	—	—	—	—	—	—
. . 28	—	—	—	—	—	—	—	—	—	—	—	—	—	—
. . 29	—	—	—	—	—	—	—	+ ?	—	—	—	—	—	—
. . 30	—	—	—	—	—	—	—	—	—	—	—	—	—	—
. . 31	—	—	—	—	—	—	—	—	—	—	—	—	—	—
. . 32	—	—	—	—	—	—	—	—	—	—	—	—	—	10

post-glacial regression

365

Nötholmen A p. 310								Nötholmen B p. 310					Rössö-Långö A p. 313		
0·5		1·5		2·5		3·5		6·6		7·4	7·6		8·3		
1—2	2<	1—2	2<	1—2	2<	1—2	2<	1—2	2<	2<	1—2	2<	1—2	2<	. . . .
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1 . . .
720	175	380	145	140	35	120	35	50	40	60	50	70	30	20	2 . . .
180	140	440	65	380	90	220	35	350	40	40	550	120	150	5+	3 . . .
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	4 . . .
—	20	—	—	40	—	—	5	100	30	10	50	20	—	—	5 . . .
—	5	20	—	20	—	20	—	50	—	—	50	10	—	5	6 . . .
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	7 . . .
160	—	1 320	—	1 040	—	1 100	—	700	—	—	750	—	—	—	8 . . .
—	—	320	—	300	—	360	—	150	—	—	1 000	—	60	—	9 . . .
—	—	1 160	—	7 000	—	7 700	—	1 250	10	20	1 250	20	270	—	10 . . .
—	—	—	—	—	—	—	—	—	—	—	—	10	—	—	11 . . .
—	—	—	—	+	—	+	—	—	—	—	—	—	—	—	12 . . .
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	13 . . .
—	—	—	—	20	—	20	—	—	—	—	—	—	—	—	14 . . .
—	5	20	5	—	5	—	—	50	10	—	—	—	—	—	15 . . .
—	—	—	10	40	10	100	+	100	10	50	—	10	—	—	16 . . .
—	—	—	—	—	20	—	5	—	90	80	—	50	—	20	17 . . .
—	25	—	10	40	—	—	5	—	—	—	—	—	—	—	18 . . .
—	—	40	—	—	—	—	—	100	—	—	100	—	60	—	19 . . .
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	20 . . .
1 060	370	3 700	235	9 020	160	9 640	85	2 900	230	260	3 800	310	570	50	. . . .
+	—	—	+	—	+	—	+	—	—	—	—	—	—	—	21 . . .
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	22 . . .
—	—	—	15	—	3	—	—	—	—	—	—	—	—	—	23 . . .
220	25?	—	3	—	3	—	5	—	5	20	—	—	—	—	24 . . .
+	10	20	+	20	8	—	5	—	5	+	—	+	—	+	25 . . .
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	26 . . .
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	27 . . .
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	28 . . .
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	29 . . .
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	30 . . .
—	—	—	—	—	—	—	—	50	—	—	—	—	—	—	31 . . .
—	—	—	—	10	—	—	—	—	5	—	—	—	—	—	32 . . .

393

Shell-beds from the sero-

366

	Rössö-Långö B p. 313				Svälte p. 325						Kjell-viken p. 326		Kebal p. 327		Bagge-röd p. 328	
	8·3		8·7		c. 1·4		c. 3·4		c. 4		5·3		c. 1·5		0·2	
	1—2	2<	1—2	2<	1—2	2<	1—2	2<	1—2	2<	1—2	2<	1—2	2<	1—2	2<
1	—	—	—	—	—	—	—	—	—	—	—	20	—	—	—	—
2	50	10	150	20	210	10	320	160	300	10	40	60	400	360	80	30
3	450	70	100	10	+	5	160	20	90	15	120	20	200	320	160	60
4	—	—	—	—	—	—	—	—	—	—	—	—	—	40	—	10
5	50	10	50	—	120	—	80	10	60	15	40	—	—	80	120	—
6	—	—	—	—	—	—	—	—	—	—	40	—	—	—	80	10
7	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
8	550	—	350	10	660	—	1 640	—	630	—	1 000	—	1 500	—	240	—
9	—	—	50	—	30	—	160	—	210	—	360	—	—	—	—	—
10	1 000	—	700	—	3 450	—	7 000	—	3 600	—	2 480	—	750	—	40	—
11	—	—	—	10	—	—	—	—	—	—	—	30	—	20	—	10
12	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
13	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
14	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
15	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
16	50	10	—	—	—	—	—	—	60	5	40	20	—	—	—	—
17	100	160	—	10	—	—	—	10	—	5	—	—	—	—	—	—
18	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
19	—	—	200	—	—	—	160	20	120	—	40	—	—	—	80	—
20	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	2 250	260	1 600	60	4 470	15	9 520	220	5 070	50	4 160	150	2 850	820	800	120
21	—	—	—	—	+	+	+	+	+	+	+	—	—	—	—	—
22	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
23	—	—	—	—	—	—	—	—	—	—	—	—	} +	80	—	—
24	—	—	—	—	—	—	—	—	—	10	—	60			—	—
25	—	5	+	+	—	—	—	5	—	+	—	10	+	10	—	5
26	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
27	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
28	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
29	—	—	—	—	75	5	60	5	15	—	—	—	—	—	—	—
30	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
31	—	—	—	—	—	—	—	—	—	—	—	—	25	—	—	—
32	—	—	—	—	—	—	—	—	—	—	—	—	50	70	20	35

394

post-glacial regression 367 Recent

. . . . Continued from p.

Mörhult II p. 329		Nordkoster p. 330				Nöddö p. 331		Otterö B p. 315		Karholmen p. 332		Brattskär p. 333		Gullmaren p. 334			
c. 4·4		2·5		3		4·2		c. 5·5		0		0·3				. . . . . . Samples: height in *m* above the sea	
1–2	2<	1–2	2<	1–2	2<	1–2	2<	1–2	2<	1–2	2<	1–2	2<	1–2	2<	. . . . . . Coarseness of material in *mm*	
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	. . . . . 1 *Patella vulgata* L. (b)	
—	—	160	55	250	150	40	40	—	10	200	45	250	60	2 250	70	. . . . . 2 *Tectura virginea* MÜLL. (b)	fr
120	+	140	35	100	30	200	20+	60	+	75	15	200	60	225	15	. . . . . 3 *Gibbula cineraria* L. (b)	
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	. . . . . 4 › *tumida* MONT. (b)	
120	20	—	5	75	—	40	10	—	—	75	30	100	60	150	—	. . . . . 5 *Lunatia intermedia* PHIL. (l)	
—	—	—	—	—	—	—	20	—	—	50	75	—	20	—	—	. . . . . 6 *Litorina obtusata* L. (b)	
—	—	—	—	—	—	80	—	—	—	500	—	—	—	—	—	. . . . . 7 *Hydrobia ulvae* PENN. (b)	
400	—	520	—	750	—	400	—	90	—	300	—	500	—	3 600	—	. . . . . 8 *Onoba striata* MONT. (b)	
—	—	—	—	—	—	—	—	—	—	—	—	100	—	—	—	. . . . . 9 › *aculeus* GOULD. (b)	Fini-glacial regressional immigrants
1 000	—	3 200	—	3 875	—	1 800	—	90	—	100	—	1 000	—	1 725	—	. . . . . 10 *Rissoa interrupta* AD. (b)	
—	20	—	—	—	10	—	—	—	—	25	15	100	—	—	—	. . . . . 11 *Rissostomia membranacea* AD. (l)	
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	. . . . . 12 *Skenea planorbis* FABR. (b)	
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	. . . . . 13 *Aporrhais pes pelecani* L. (l)	
—	—	20	—	—	—	—	—	—	—	—	—	—	—	—	—	. . . . . 14 *Parthenia spiralis* MONT. (b)	
—	—	40	—	25	—	—	20	—	—	—	—	50	—	300	—	. . . . . 15 *Clathurella linearis* MONT. (l)	
40	—	—	+	—	—	—	—	—	—	—	—	—	80	—	—	. . . . . 16 *Polytropa lapillus* L. (b)	
—	10	—	—	—	—	—	10	—	20	—	15	—	—	—	—	. . . . . 17 *Nassa reticulata* L. (l)	
—	—	—	—	—	140	—	—	—	—	—	—	—	—	—	—	. . . . . 18 › *incrassata* STRÖM (b)	
80	—	20	—	100	10	40	50	—	—	75	—	50	20	675	5	. . . . . 19 › *sp.*	
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	. . . . . 20 *Utriculus umbilicatus* MONT. (l)	
1 760	50	4 100	95	5 175	340	2 600	170	240	30	1 400	195	2 350	300	8 925	90	. . . . Gastropoda: sum	fr
—	—	—	—	—	+	—	—	—	—	—	—	—	—	+	—	. . . . . 21 *Amphidetus sp.*	
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	. . . . . 22 *Lophyrus albus* L.* (a)	prt
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	. . . . . 23 *Anomia patelliformis* L. (l)	
—	—	—	5	—	20	—	10	—	—	—	—	—	20	—	—	. . . . . 24 › *striata* BROCCHI (l)	
—	+	—	10	+	20	—	+	+	+	+	+	—	+	—	—	. . . . . 25 *Pecten varius* L. (l)	
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	. . . . . 26 › *septemradiatus* MÜLL. (b)	
—	—	—	—	—	—	—	—	—	—	—	—	—	+	38	15	. . . . . 27 › *tigrinus* MÜLL. (b)	Primo-post-glacial regressional and post-glacial transgressional immigrants
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	. . . . . 28 *Vola maxima* L. (l)	
—	—	—	—	—	—	—	—	—	—	—	—	—	—	75	—	. . . . . 29 *Modiolaria discors* L. (b)	
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	3	. . . . . 30 *Nucula tumidula* MALM (b)	
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	. . . . . 31 *Portlandia sp.* (*cf. tenuis* PHIL.)	
—	—	10	3	—	—	40	—	—	—	100	45	—	—	113	40	. . . . . 32 *Cardium cf. fasciatum* MONT. (b)	

395

. . . . Continued on p.

Shell-beds from the primo-post-glacial re-

Continued from p. 368

Primo-post-glacial regressional and post-glacial transgressional immigrants

		Nyckleby p. 284				Mörhult I p. 285						Summinge p. 286		Lunnevik I p. 287		→			
	Samples: height in *m* above the sea	c. 22·3		c. 22·6		c. 9		c. 10		c. 12		10		c. 17		c. 2		c. 3	
	Coarseness of material in *mm*	1–2	2<	1–2	2<	1–2	2<	1–2	2<	1–2	2<	1–2	2<	1–2	2<	1–2	2<	1–2	2<
	1 *Venus gallina* L. (b)	—	—	—	—	—	—	—	—	20	—	—	—	—	—	—	—	—	—
prt	2 › *sp.*	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	3 *Timoclea ovata* PENN. (b)	15	—	25	13	40	10	60	40	140	30	60	—	75	15	—	—	15	8
	4 *Tapes decussatus* L. (l)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	5 *Lucinopsis undata* PENN. (l)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	6 *Axinus flexuosus* MONT. (b)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	7 › *Sarsi* PHIL. (b)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	8 › *sp.*	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	9 *Cyamium minutum* FABR. (b)	—	—	—	—	—	—	—	—	40	—	—	—	—	—	—	—	—	—
	10 *Lasaea rubra* MONT. (l)	—	—	—	—	—	—	—	—	—	—	15	—	—	—	—	—	—	—
	11 *Kellia suborbicularis* MONT. (b)	—	—	—	—	—	—	—	—	—	—	—	—	—	5	—	—	—	—
	12 *Montacuta substriata* MONT. (b)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	13 *Tellimya ferruginosa* MONT. (b)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	14 *Mactra elliptica* BROWN (b)	—	—	—	—	—	—	—	—	40	75	—	—	—	—	—	—	—	—
	15 › *subtruncata* DA COSTA (l)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	16 *Abra cf. nitida* MÜLL. (b)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	17 *Tellina pusilla* PHIL.* (b)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	18 *Psammobia vespertina* CHEMN. (l)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	19 *Thracia papyracea* POLI (l)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	20 › *sp.*	—	—	—	—	—	—	20	—	20	—	—	—	—	—	—	—	—	—
	21 *Corbula gibba* OLIVI (l)	—	—	—	—	—	—	—	—	—	8	—	—	—	—	15	—	—	—
	22 *Antalis entalis* L. (b)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	23 *Siphonentalis lofotensis* M. SARS (b)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	Pelecypoda: sum	60	70	25	46	40	20	100	70	260	113	90	20	165	75	45	25	45	46
	24 *Nacella pellucida* L. (b)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	15
	25 *Emarginula fissura* L. (l)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	26 *Capulus hungaricus* L. (l)	—	10	—	10	—	—	—	—	—	—	—	10	—	—	—	—	—	—
	27 *Lacuna pallidula* DA COSTA (b)	90	—	50	35	—	20	80	60	100	30	90	—	—	—	60	—	—	—
	28 *Alvania reticulata* MONT. (l)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	29 › *punctura* MONT. (l)	—	—	450	—	—	—	520	—	40	—	150	—	180	—	30	—	30	—
	30 *Rissoa violacea* DESM. (l)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	31 › *parva* DA COSTA (l)	750	—	1 000	—	120	—	520	—	320	—	60	—	660	—	—	—	120	—
	32 › *inconspicua* ALD. (l)	—	—	50	—	—	—	120	—	200	—	—	—	90	—	—	—	90	—
prt	33 *Turritella terebra* L. (l)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	34 *Bittium reticulatum* DA COSTA (l)	—	—	100	25	—	—	—	—	40	—	—	—	600	420	30	—	—	—

Continued on p. 396

gression and the post-glacial transgression

369

Otterö A p. 271										Fjällbacka p. 276					Over!	
c. 4		c. 5		c. 6		c. 7		c. 7·7		cc. 16·3		cc. 16·8		cc. 17·3		
1–2	2<	1–2	2<	1–2	2<	1–2	2<	1–2	2<	1–2	2<	1–2	2<	1–2	2<	
—	—	—	—	—	5	—	—	—	—	—	—	—	—	—	—	1 . . .
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	2 . . .
45	5	20	—	30	5	—	—	—	5	30	—	60	8	30	15	3 . . .
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	4 . . .
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	5 . . .
—	—	—	—	—	—	—	—	—	—	—	—	20	—	—	—	6 . . .
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	7 . . .
—	—	—	—	—	—	—	—	—	—	15	—	—	—	—	—	8 . . .
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	9 . . .
—	—	—	—	—	—	—	—	—	—	15	—	60	—	75	—	10 . . .
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	11 . . .
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	12 . . .
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	13 . . .
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	14 . . .
—	—	—	—	—	—	—	—	—	15	—	—	—	—	—	—	15 . . .
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	16 . . .
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	17 . . .
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	18 . . .
—	—	—	—	—	—	25	—	—	—	—	—	40	—	30	—	19 . . .
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	20 . . .
—	—	—	—	—	—	—	—	—	—	45	5	20	80	45	23	21 . . .
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	22 . . .
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	23 . . .
45	35	120	105	270	100	275	100	75	50	105	5	200	88	195	53	. . . .
—	—	—	—	—	—	—	—	—	—	—	10	—	—	—	—	24 . . .
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	25 . . .
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	26 . . .
30	20	120	—	30	—	50	40	90	30	30	10	40	30	30	—	27 . . .
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	28 . . .
30	—	—	—	150	—	250	—	120	—	60	—	160	—	—	—	29 . . .
—	—	—	—	—	—	—	—	240	40	—	—	—	—	—	—	30 . . .
390	—	40	—	360	—	500	—	1 800	—	90	—	80	—	30	—	31 . . .
150	—	120	—	600	—	450	—	270	—	60	—	—	—	30	—	32 . . .
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	33 . . .
—	—	—	—	—	—	12 500	4 200	22 800	3 300	—	—	—	—	—	—	34 . . .

397

Shell-beds from the post-

370

	Fjällbacka										Löndal					
	Over! p. 276										p. 288					
	cc. 17·8		cc. 18·3		cc. 19·3		cc. 19·8		cc. 20		cc. 9·5		cc. 11·5		cc. 13·5	
	1—2	1<	1—2	2<	1—2	2<	1<	2<	1—2	2<	1—2	2<	1—2	2<	1—2	2<
1	—	15	15	—	—	—	15	—	—	—	—	—	—	—	—	—
2	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
3	330	65	270	5	30	10	30	—	—	3	80	23	60	10	80	15
4	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
5	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
6	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
7	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
8	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
9	30	—	45	—	—	—	—	—	—	—	—	—	—	—	—	—
10	120	—	15	—	—	—	15	—	—	—	—	—	—	—	—	—
11	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
12	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
13	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
14	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
15	—	—	—	—	30	10	45	5	45	15	—	—	—	—	—	—
16	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
17	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
18	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
19	—	—	15	—	—	—	90	15	—	—	—	—	—	—	—	—
20	—	—	—	—	30	—	15	—	15	—	20	—	—	—	—	—
21	45	10	45	10	15	10	30	15	15	8	—	—	—	—	—	—
22	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
23	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	525	90	420	35	180	40	270	35	75	26	100	23	160	25	100	15
24	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
25	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
26	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
27	60	10	120	—	90	—	30	—	—	—	—	—	40	30	40	—
28	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
29	—	—	60	—	120	—	—	—	—	—	40	—	80	—	—	—
30	—	—	—	—	30	20	30	5	—	5	—	15	80	—	120	—
31	150	—	30	—	600	—	1 650	—	180	—	40	—	2 400	—	720	—
32	60	—	60	—	450	—	220	—	—	—	160	—	360	—	80	—
33	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
34	—	—	30	10	3 300	550	2 700	375	1 650	175	160	—	7 600	720	2 800	405

398

glacial transgression

371

Otterö B p. 271						Hvalö p. 289				Mörhult II p. 290				
c. 3·8		c. 4·5		c. 5·2		c. 3		c. 5		c. 3·3		c. 4		. . . .
1–2	2<	1–2	2<	1–2	2<	1–2	2<	1–2	2<	1–2	2<	1–2	2<	. . . .
—	—	15	—	—	—	—	—	—	—	—	—	—	—	1 . . .
—	—	—	3	—	—	—	—	—	—	—	—	—	—	2 . . .
30	20	45	25	30	5	250	15	50	—	30	10	40	20	3 . . .
—	—	—	—	—	—	—	—	—	—	—	—	—	—	4 . . .
—	—	—	—	—	—	—	—	—	—	—	—	—	—	5 . . .
—	—	—	—	—	—	—	—	—	5	—	—	—	—	6 . . .
—	—	—	—	—	—	—	—	—	—	—	—	—	—	7 . . .
—	—	—	—	—	—	—	—	—	—	—	—	—	—	8 . . .
—	—	—	—	—	—	—	—	—	—	—	—	—	—	9 . . .
—	—	—	—	—	—	—	—	—	—	—	—	—	—	10 . . .
—	—	—	—	—	—	—	—	—	—	—	—	—	—	11 . . .
—	—	—	—	—	—	—	—	25	—	—	—	—	—	12 . . .
—	—	—	10	—	5	—	—	—	—	—	—	—	—	13 . . .
—	—	—	—	—	—	—	—	—	—	—	—	—	—	14 . . .
—	—	180	18	90	10	—	—	—	—	—	—	—	—	15 . . .
—	—	—	10?	—	—	—	—	—	—	—	—	—	—	16 . . .
—	—	—	—	—	—	—	25	—	—	—	—	—	—	17 . . .
—	—	—	—	—	—	—	—	—	—	—	—	—	—	18 . . .
—	3	—	—	—	—	—	—	—	—	—	—	—	—	19 . . .
—	—	—	—	—	—	—	—	—	—	—	—	—	—	20 . . .
—	3	360	58	390	160	—	—	—	—	—	—	—	—	21 . . .
—	—	—	—	—	—	—	—	—	—	—	—	—	—	22 . . .
—	—	—	—	—	—	—	—	—	—	—	—	—	—	23 . . .
90	77	600	147	510	185	275	125	300	100	30	40	40	45	. . . .
—	—	—	—	—	—	—	—	—	—	—	—	—	—	24 . . .
—	—	—	—	—	—	—	—	+	+	—	—	—	—	25 . . .
—	—	—	—	—	—	—	—	—	—	—	—	—	—	26 . . .
30	5	30	15	30	20	—	20	50	10	—	—	—	—	27 . . .
—	—	—	—	—	—	—	—	—	—	—	—	—	—	28 . . .
—	—	120	—	120	—	250	—	750	—	—	—	—	—	29 . . .
180	—	70	25	480	40	—	—	—	—	—	—	200	20	30 . . .
1 950	—	5 550	—	10 950	40	7 000	—	2 850	—	390	—	6 400	10	31 . . .
180	—	60	—	150	—	300	—	800	—	—	—	—	—	32 . . .
—	—	—	—	—	—	—	—	—	—	—	—	—	—	33 . . .
12 000	1 500	11 700	2 050	19 050	2 800	9 250	2 000	7 000	1 550	60	20	2 400	270	34 . . .

399

Shell-beds from the post-glacial transgression

372

	Rössö-Långö A p. 279				Rössö-Långö C p. 279				Torse-röd p. 281		Smittmyren p. 291				Fjälla p. 282		N. Holt p. 283	
. . . .	7		7·9		7		7·8		cc. 0·5		30·6		30·9		31		c. 31·5	
. . . .	1—2	2<	1—2	2<	1—2	2<	1—2	2<	1—2	2<	1—2	2<	1—2	2<	1—2	2<	1—2	2<
. . . . 1	—	—	—	—	—	—	—	—	15	—	—	—	—	—	—	3?	—	—
. . . . 2	—	—	—	—	13	—	—	—	—	—	—	—	—	—	—	—	—	—
. . . . 3	150	100	125	55	100	45	175	95	150	30	—	5	30	—	252	96	—	5
. . . . 4	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
. . . . 5	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
. . . . 6	—	—	—	—	—	—	—	—	—	—	—	—	—	—	12	3	—	10
. . . . 7	—	—	—	—	—	—	—	—	150	15	—	—	—	—	—	—	—	—
. . . . 8	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	35	—
. . . . 9	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
. . . . 10	—	—	—	—	—	—	—	—	30	—	—	—	—	—	—	—	—	—
. . . . 11	—	—	—	3	—	—	—	—	—	—	—	—	—	—	—	—	—	—
. . . . 12	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
. . . . 13	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
. . . . 14	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
. . . . 15	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	3	—	—
. . . . 16	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	105?	30
. . . . 17	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
. . . . 18	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
. . . . 19	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
. . . . 20	—	—	—	—	—	—	—	—	—	—	—	—	30	—	—	—	—	—
. . . . 21	—	—	25	8	—	—	13	—	300	80	—	—	—	—	156	66	35	30
. . . . 22	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
. . . . 23	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
. . . .	213	118	200	74	126	100	188	98	645	125	30	35	90	45	444	189	175	80
. . . . 24	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
. . . . 25	25	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
. . . . 26	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
. . . . 27	—	—	—	—	—	—	—	—	—	40	—	50	90	50	—	—	700	200
. . . . 28	100	—	100	—	150	—	—	100	—	—	—	—	—	—	—	—	—	—
. . . . 29	150	—	200	—	75	—	—	250	—	—	30	—	90	—	—	—	140	—
. . . . 30	75	—	175	5	150	—	50	5	60	10	—	—	—	—	—	—	—	—
. . . . 31	1 625	—	1 450	—	1 625	—	1 750	—	690	—	180	—	180	—	—	—	1 470	—
. . . . 32	—	—	25	—	100	—	—	—	90	—	150	—	60	—	—	—	280	—
. . . . 33	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
. . . . 34	4 375	450	6 250	375	5 000	525	7 500	625	2 550	460	+	30	4 500	1 150	96	6	6 125	2 40[illegible]
. . . .																		

400

Shell-beds from the post-glacial transgression maximum

373

Medvik A p. 292		Medvik B p. 292				Lunnevik II p. 294											
c. 26		c. 29		c. 31		c. 27·2		c. 28·5		c. 30		c. 32·5		c. 34		. . . .
1—2	2<	1—2	2<	1—2	2<	1—2	2<	1—2	2<	1—2	2<	1—2	2<	1—2	2<	. . . .
—	—	—	—	—	—	20	—	—	—	10	—	10	3	—	—	1 . . .
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	2 . . .
53	5	—	—	—	—	20	—	30	13	60	10	30	13	20	—	3 . . .
—	+(?)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	4 . . .
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	5 . . .
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	6 . . .
—	—	—	—	—	—	—	15	—	—	—	8	—	—	—	—	7 . . .
—	—	—	—	—	—	—	—	20	5	—	—	—	+	—	+	8 . . .
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	9 . . .
35	—	13	—	15	—	—	—	20	—	—	—	—	—	—	—	10 . . .
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	11 . . .
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	12 . . .
—	—	—	—	—	—	—	—	—	—	10	—	—	—	—	—	13 . . .
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	14 . . .
—	—	—	—	—	—	—	—	—	10	30	30	40	—	—	—	15 . . .
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	16 . . .
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	17 . . .
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	18 . . .
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	19 . . .
—	—	—	—	—	—	—	—	40	—	80	—	120	—	—	—	20 . . .
—	5	—	—	—	—	—	—	—	10	+	5	10	5	—	—	21 . . .
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	22 . . .
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	23 . . .
88	10	13	17	15	—	40	60	110	48	190	86	220	34	50	13	. . . .
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	10	24 . . .
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	25 . . .
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	26 . . .
35	50	25	75	30	45	20	—	—	5	20	—	—	—	—	—	27 . . .
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	28 . . .
70	—	—	—	—	—	220	—	80	—	—	—	40	—	60	—	29 . . .
—	—	—	—	30	—	—	—	20	—	—	—	—	5	—	—	30 . . .
1 785	—	625	—	810	—	120	—	400	—	760	—	40	—	60	—	31 . . .
350	—	—	—	—	—	220	—	440	—	390	—	220	—	160	—	32 . . .
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	33 . . .
175	80	—	—	30	45	80	30	2 800	1 175	4 400	1 525	2 500	975	—	—	34 . . .

401

Shell-beds from the post-glacial

374

	Rössö p. 296										Hällan p. 297		Hälle I p. 298	
. . . .	c. 21		c. 21·7		c. 22·2		c. 23·3		c. 23·6		c. 36·5		c. 39	
. . . .	1—2	2<	1—2	2<	1—2	2<	1—2	2<	1—2	2<	1—2	2<	1—2	2<
. . . . 1	—	—	—	—	—	—	—	—	—	—	—	—	—	—
. . . . 2	—	—	—	—	—	—	—	—	—	—	—	—	—	—
. . . . 3	63	3	163	10	50	5	—	5	50	5	50	—	100	10
. . . . 4	—	—	—	—	—	—	—	—	—	10	—	—	—	+
. . . . 5	—	—	—	—	—	—	—	—	—	—	—	—	—	—
. . . . 6	—	—	—	—	—	—	—	—	—	—	—	—	—	—
. . . . 7	—	—	—	—	—	—	—	—	—	—	—	—	—	—
. . . . 8	—	—	—	—	—	—	—	—	—	—	—	—	—	—
. . . . 9	—	—	—	—	—	—	—	—	—	—	—	—	—	—
. . . . 10	13	—	—	—	—	—	—	—	13	—	—	—	—	—
. . . . 11	—	—	—	—	—	—	—	3	—	—	—	—	—	—
. . . . 12	—	—	—	—	—	—	—	—	—	—	—	—	—	—
. . . . 13	—	—	—	—	—	—	—	—	—	—	—	—	—	—
. . . . 14	—	—	—	—	—	—	—	—	—	—	—	—	—	—
. . . . 15	—	—	—	3	—	—	—	—	13	—	—	—	—	3
. . . . 16	—	—	—	—	—	—	—	—	—	—	—	—	—	—
. . . . 17	—	—	—	—	—	—	—	—	—	—	—	—	—	—
. . . . 18	—	—	—	—	—	—	—	—	—	—	—	—	—	—
. . . . 19	—	—	—	—	—	5	—	5	—	—	—	—	—	—
. . . . 20	13	—	75	—	13	—	25	—	38	—	—	—	—	10
. . . . 21	—	—	—	—	—	—	—	—	—	—	—	—	—	3
. . . . 22	—	—	—	—	—	—	—	—	—	—	—	—	—	—
. . . . 23	—	—	—	—	—	—	—	—	—	—	—	—	—	—
. . . .	127	26	338	56	163	48	150	31	114	26	75	—	100	29
. . . . 24	—	—	—	—	—	—	—	—	—	—	—	—	—	—
. . . . 25	—	—	—	—	—	+	+	—	—	—	—	—	—	—
. . . . 26	—	—	—	—	—	—	—	—	—	—	—	—	—	—
. . . . 27	25	—	50	—	—	—	—	20	25	10	—	—	100	10
. . . . 28	—	—	—	—	—	—	—	—	—	—	—	—	—	—
. . . . 29	75	—	175	—	125	—	175	—	175	—	50	—	50	—
. . . . 30	—	—	—	—	—	—	—	—	100	—	—	—	—	—
. . . . 31	50	—	125	—	125	—	475	—	1 750	—	500	—	650	—
. . . . 32	225	—	175	—	250	—	600	—	375	—	100	—	—	—
. . . . 33	—	—	—	—	—	—	—	—	—	—	—	—	—	—
. . . . 34	—	5	500	55	1 700	120	7 125	540	2 625	100	700	56	2 000	675
. . . .	402													

transgression maximum

375

Stare p. 302				Sandbogen p. 303						Efvenås p. 304		
c. 31		c. 32		c. 34		c. 35		c. 36		28·5		
1—2	2<	1—2	2<	1—2	2<	1—2	2<	1—2	2<	1—2	2<	
—	—	—	—	—	—	—	—	—	—	—	—	1 . . . .
—	—	—	—	—	—	—	—	—	—	—	—	2 . . . .
13	—	15	—	20	20	—	—	40	—	18	—	3 . . . .
—	3	—	5	—	—	—	—	—	—	—	—	4 . . . .
—	—	—	—	—	—	—	—	—	—	—	—	5 . . . .
—	—	—	—	—	—	—	—	—	—	—	—	6 . . . .
—	—	—	—	—	—	—	—	—	—	—	—	7 . . . .
—	—	—	—	—	—	—	—	—	—	—	—	8 . . . .
—	—	—	—	—	—	—	—	—	—	—	—	9 . . . .
—	—	—	—	—	—	—	—	—	—	—	—	10 . . . .
—	—	—	—	—	—	—	—	—	—	—	—	11 . . . .
—	—	—	—	—	—	—	—	—	—	—	—	12 . . . .
—	—	—	—	—	—	—	—	—	—	—	—	13 . . . .
—	—	—	—	—	—	—	—	—	—	—	—	14 . . . .
—	—	—	—	—	—	—	—	—	—	18	—	15 . . . .
—	—	—	—	—	—	—	—	—	—	—	—	16 . . . .
—	—	—	—	—	—	—	—	—	—	—	—	17 . . . .
—	—	—	—	—	—	—	—	—	—	—	—	18 . . . .
—	—	—	—	—	—	—	—	—	—	—	—	19 . . . .
—	—	—	—	—	—	—	—	—	—	—	—	20 . . . .
—	—	—	—	—	—	—	—	—	—	—	—	21 . . . .
—	—	—	—	—	—	—	—	—	—	—	—	22 . . . .
—	—	—	—	—	—	—	—	—	—	—	—	23 . . . .
13	3	15	5	20	20	—	—	40	20	36	—	. . . . .
—	—	—	—	—	—	—	—	—	—	—	—	24 . . . .
—	—	—	—	—	—	—	—	—	—	—	—	25 . . . .
—	—	—	—	—	—	—	—	—	—	—	—	26 . . . .
125	5	—	—	—	—	160	—	80	60	—	—	27 . . . .
—	—	—	—	—	—	—	—	—	—	—	—	28 . . . .
—	—	—	—	40	—	—	—	40	—	—	—	29 . . . .
—	—	—	—	—	—	—	—	—	—	—	—	30 . . . .
2 000	—	1 500	—	40	—	600	—	2 400	—	—	140	31 . . . .
—	—	60	—	—	—	—	—	480	—	—	—	32 . . . .
—	—	—	—	—	—	—	—	—	—	—	—	33 . . . .
10 250	610	16 500	600	—	—	—	—	13 200	6 250	770	90	34 . . . .

403

Shell-beds from the sero-

376

	Kilarna p. 306		Lund p. 315				Holke-dalskilen p. 316		Skälleröd p. 317							
. . . .	c. 22		c. 25·1		c. 25·6		25·9		c. 2 ·6		c. 22·6		c. 23·5		c. 23·8	
. . . .	1—2	2 <	1—2	2 <	1—2	2 <	1—2	2 <	1—2	2 <	1—2	2 <	1—2	2 <	1—2	2 <
. . . . 1	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
. . . . 2	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
. . . . 3	—	10	450	180	250	80	60	10	—	3	40	35	100	35	20	10
. . . . 4	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
. . . . 5	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
. . . . 6	25	30	—	10	—	—	—	—	—	—	—	—	—	—	—	—
. . . . 7	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
. . . . 8	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
. . . . 9	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
. . . . 10	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
. . . . 11	—	—	25	—	—	—	—	—	—	—	—	—	—	—	—	—
. . . . 12	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
. . . . 13	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
. . . . 14	—	—	—	—	—	—	—	—	—	—	—	—	—	5	80	—
. . . . 15	—	—	—	—	—	—	30	—	—	—	—	—	—	—	20	20
. . . . 16	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
. . . . 17	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
. . . . 18	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
. . . . 19	—	—	100	—	—	—	—	—	—	—	—	—	—	—	—	10
. . . . 20	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
. . . . 21	125	100	100	40	75	—	45	25	—	3	—	—	40	5	—	5
. . . . 22	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
. . . . 23	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
. . . .	150	180	675	240	375	100	150	75	30	6	120	35	160	45	120	45
. . . . 24	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
. . . . 25	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
. . . . 26	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
. . . . 27	25	20	—	—	150	20	90	50	—	—	—	—	80	10	280	50
. . . . 28	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
. . . . 29	125	—	50	—	300	—	—	—	30	—	80	—	—	—	—	—
. . . . 30	—	20	100	20	200	10	360	60	30	—	360	60	160	30	120	10
. . . . 31	1 200	20	2 600	20	2 500	20	1 200	—	690	5	9 400	20	21 000	20	12000	—
. . . . 32	200	—	350	—	700	—	180	—	90	—	480	—	560	—	200	—
. . . . 33	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
. . . 34	2 500	2 200	4 500	3 400	6 000	1 450	18 600	10 100	1 650	330	11 000	2 300	9 400	1 000	8 400	1 100

post-glacial regression
377

Prästängen p. 318		Lejonkällan p. 320		Torseröd p. 307						Sydkoster p. 322		Grandalen p. 323		
21		22		cc. 1·5		cc. 3·5		cc. 5·5		c. 15		c. 14		. . . . .
1–2	2<	1–2	2<	1–2	2<	1–2	2<	1–2	2<	1–2	2<	1–2	2<	. . . . .
—	—	—	—	—	—	—	—	15	—	—	—	—	—	1 . . . .
—	—	—	—	—	—	—	—	—	—	—	—	—	—	2 . . . .
140	35	80	35	15	—	—	—	15	—	210	80	80	30	3 . . . .
—	—	—	—	—	10	—	—	—	—	—	—	—	—	4 . . . .
—	—	—	—	—	—	—	—	—	—	—	—	—	—	5 . . . .
—	—	—	—	—	—	—	—	—	—	—	—	—	—	6 . . . .
—	—	—	—	—	—	—	—	—	—	—	—	—	—	7 . . . .
—	—	—	—	—	—	—	—	—	—	—	—	40	—	8 . . . .
—	—	—	—	—	—	—	—	—	—	—	—	—	—	9 . . . .
—	—	—	—	15	—	30	—	15	—	—	—	—	—	10 . . . .
—	—	—	—	—	—	—	—	—	—	—	—	—	—	11 . . . .
—	—	—	—	—	—	—	—	—	—	—	—	—	—	12 . . . .
—	—	—	—	—	—	—	—	—	—	—	—	—	—	13 . . . .
—	—	—	—	—	—	—	—	—	—	—	—	—	—	14 . . . .
—	—	—	—	90	5	30	5	105	—	60	—	—	—	15 . . . .
—	—	—	—	—	—	—	—	—	—	—	—	—	—	16 . . . .
—	—	20	8	—	—	—	—	—	—	—	—	—	—	17 . . . .
—	—	40	23	—	—	—	—	—	—	—	10	—	—	18 . . . .
—	—	—	—	30	—	—	—	15	—	—	—	—	—	19 . . . .
—	—	—	—	—	—	—	—	—	—	—	—	—	—	20 . . . .
40	10	—	3	60	5	—	5	—	5	—	3	120	—	21 . . . .
—	—	—	—	—	—	—	—	—	—	—	—	—	—	22 . . . .
—	—	—	—	—	—	—	—	—	—	—	—	—	—	23 . . . .
180	65	160	89	210	25	60	15	165	5	270	109	240	40	. . . . .
—	—	—	—	—	—	—	—	—	—	—	—	—	—	24 . . . .
—	—	—	—	—	—	—	—	—	—	—	—	—	20	25 . . . .
—	—	—	—	—	—	—	—	—	—	—	—	—	—	26 . . . .
40	50	120	25	90	20	—	10	210	40	—	10	—	—	27 . . . .
—	—	—	—	—	—	—	—	—	—	—	—	—	—	28 . . . .
200	—	40	—	30	—	—	—	180	—	60	—	240	—	29 . . . .
240	10	320	35	—	—	—	10	180	30	300	5	3 360	100	30 . . . .
7 600	10	10 000	10	2 700	—	1 950	—	4 110	—	21 000	5	24 000	—	31 . . . .
400	—	—	—	60	—	30	—	150	—	—	—	80	—	32 . . . .
—	—	—	—	—	—	—	—	—	—	—	—	—	—	33 . . . .
6 240	2 150	14 000	2 250	12 000	1 350	4 350	430	8 700	900	15 600	520	48 000	3 900	34 . . . .

405

Shell-beds from the sero-

378

	Tofterna A p. 308												Tofterna C p. 308	
....	2		3		4		5		6		7		c. 7·5	
....	1—2	2<	1—2	2<	1—2	2<	1—2	2<	1—2	2<	1—2	2<	1—2	2<
.... 1	—	—	—	—	—	—	—	—	13	5	—	—	—	—
.... 2	—	—	—	—	—	—	—	—	—	—	—	—	—	—
.... 3	100	10	13	3	75	5	100	3	325	35	113	25	—	5
.... 4	—	—	—	—	—	—	—	—	—	—	—	—	—	—
.... 5	—	—	—	—	—	—	—	—	—	—	—	—	—	—
.... 6	—	—	—	—	—	—	—	—	—	—	—	—	—	—
.... 7	—	—	—	—	—	—	—	—	—	—	—	—	—	—
.... 8	+	—	—	+	—	—	—	—	—	+	—	+	—	—
.... 9	—	—	—	—	—	—	—	—	—	—	—	—	—	—
.... 10	—	—	—	—	—	—	—	—	—	—	—	—	—	—
.... 11	25	—	13	—	—	—	13	—	—	—	—	—	—	—
.... 12	—	—	—	—	—	—	—	—	—	—	—	—	—	—
.... 13	13	—	—	—	—	—	—	—	13	3	—	—	—	—
.... 14	—	—	—	—	—	—	—	—	—	—	—	—	—	—
.... 15	—	—	—	—	—	—	—	—	+	—	—	8	—	—
.... 16	—	5	—	—	—	—	—	—	—	—	—	—	—	—
.... 17	—	—	—	—	—	—	—	—	—	—	—	—	—	—
.... 18	—	—	—	—	—	—	—	—	—	—	—	—	—	—
.... 19	—	8	—	13	—	—	—	—	—	—	—	—	—	—
.... 20	125	—	125	—	50	—	25	—	—	—	—	—	—	—
.... 21	—	—	—	—	—	—	—	3	160	55	150	55	—	—
.... 22	—	5	+(?)	+(?)	—	+(?)	—	—	—	—	—	—	—	—
.... 23	—	—	—	—	—	—	—	—	—	—	—	—	—	—
....	313	196	164	96	150	43	151	41	511	114	263	93	—	15
.... 24	75	10	—	20	50	—	—	10	—	—	—	—	—	—
.... 25	+	+	+	+	—	—	—	—	+	—	+	—	—	—
.... 26	—	—	—	—	—	—	50	—	—	—	—	—	—	—
.... 27	75	—	25	5	50	5	175	5	175	10	75	5	120	3
.... 28	—	—	—	—	—	—	—	—	—	—	—	—	—	—
.... 29	6 775	—	3 250	—	1 375	—	675	—	525	—	225	—	40	—
.... 30	—	—	—	—	—	—	150	—	250	—	125	5	—	3
.... 31	4 250	—	3 750	—	1 300	—	1 125	—	1 375	—	2 250	—	2 200	3
.... 32	500	—	2 500	—	2 625	—	1 500	—	—	—	75	—	200	—
.... 33	—	—	—	—	—	—	—	—	—	—	—	—	—	—
.... 34	—	—	—	—	—	—	1 950	235	9 500	1 285	12 575	935	5 600	3 25
....														

post-glacial regression

379

Nötholmen A p. 310								Nötholmen B p. 310					Rössö-Långö A p. 313		
0·5		1·5		2·5		3·5		6·6		7·4	7·6		8·3		
1–2	2<	1–2	2<	1–2	2<	1–2	2<	1–2	2<	2<	1–2	2<	1–2	2<	
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1 . . .
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	2 . . .
80	60	+	10	—	—	—	5	125	50	10	100	35	—	3	3 . . .
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	4 . . .
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	5 . . .
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	6 . . .
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	7 . . .
—	5	—	+	—	—	—	—	—	—	—	—	—	—	—	8 . . .
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	9 . . .
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	10 . . .
10	—	—	—	—	—	—	—	—	—	—	—	—	—	—	11 . . .
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	12 . . .
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	13 . . .
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	14 . . .
—	—	—	—	—	—	—	—	—	—	15	25	—	—	—	15 . . .
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	16 . . .
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	17 . . .
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	18 . . .
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	19 . . .
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	20 . . .
—	—	—	—	—	—	—	—	50	10	10	25	—	—	—	21 . . .
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	22 . . .
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	23 . . .
310	100	20	28	30	14	—	15	225	75	55	150	35	—	3	. . . .
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	24 . . .
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	25 . . .
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	26 . . .
20	20	340	90	320	95	380	80	250	30	40	100	30	30	—	27 . . .
—	—	—	—	—	—	120	—	—	—	—	—	—	30	—	28 . . .
560	—	160	—	80	—	40	—	100	—	—	50	—	—	—	29 . . .
—	45	380	15	180	5	260	—	50	—	—	50	—	—	—	30 . . .
(?)	—	5 500	5	12 000	—	22 000	—	26 250	60	190	32 500	90	3 450	—	31 . . .
(?)	—	100	—	40	—	160	—	—	—	—	—	—	—	—	32 . . .
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	33 . . .
5 580	1 375	7 140	555	7 460	310	6 660	100	2 500	1 170	850	11 750	1 200	8 400	475	34 . . .

407

Shell- beds from the sero-

380

	Rössö—Långö B				Svälte						Kjell-viken		Kebal		Baggeröd	
	p. 313				p. 325						p. 326		p. 327		p. 328	
. . .	8·3		8.7		c. 1·4		c. 3·4		c. 4		5·3		c. 1·5		0.2	
. . .	1—2	2<	1—2	2<	1—2	2<	1—2	2<	1—2	2<	1—2	2<	1—2	2<	1—2	2<
. . 1	—	—	—	—	—	—	—	—	15	—	—	—	—	—	—	—
. . 2	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
. . 3	—	10	100	15	90	5	60	20	60	20	60	25	—	40	200	90
. . 4	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
. . 5	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
. . 6	—	—	—	—	—	—	40?	20	60?	—	—	—	—	—	—	—
. . 7	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
. . 8	—	—	—	—	—	—	—	—	—	—	—	—	—	20	—	—
. . 9	—	—	—	—	15	—	—	—	—	—	—	—	—	—	—	—
. . 10	—	—	—	—	15	—	—	—	—	—	—	—	—	—	—	—
. . 11	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
. . 12	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
. . 13	—	—	—	—	—	—	—	5	—	3	—	—	—	—	—	—
. . 14	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
. . 15	—	5	25	—	—	3	—	—	15	15	40	10	—	—	—	—
. . 16	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
. . 17	—	—	—	—	—	—	—	15	—	—	—	—	—	—	—	—
. . 18	—	—	—	—	—	—	—	—	—	—	—	5	—	—	—	—
. . 19	—	—	—	—	—	—	—	—	—	—	40	5	—	—	—	—
. . 20	—	—	25	—	—	—	—	13	15	8	—	—	—	—	—	—
. . 21	—	5	25	5	15	—	60	5	60	30	80	10	—	20	160	90
. . 22	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
. . 23	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
. . .	—	25	175	20	210	13	220	88	240	86	220	125	75	240	380	220
. . 24	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
. . 25	—	—	—	—	—	—	—	—	—	—	—	—	—	340	—	10
. . 26	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
. . 27	50	—	—	—	90	10	480	20	90	20	40	70	—	40	—	—
. . 28	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
. . 29	150	—	—	—	—	—	120	—	120	—	40	—	450	—	—	—
. . 30	—	—	—	—	30	5	200	—	300	20	40	30	1 250	200	120	4(
. . 31	13 000	+	12 600	50	900	—	2 200	—	1 950	—	8 400	30	6 750	—	1 600	—
. . 32	—	—	—	—	30	—	240	—	60	—	80	—	150	—	—	—
. . 33	—	—	—	—	—	—	—	—	—	10	—	—	—	20	—	—
. . 34	13 500	1 550	13 700	350	3 750	325	10600	1 070	7 200	385	2 200	260	14 500	4 400	22 800	4 250
. . .																

408

post-glacial regression Recent

381 . . . . Continued from p.

Mörhult II p. 329		Nordkoster p. 330				Näddö p. 331		Otterö B p. 315		Karholmen p. 332		Brattskär p. 333		Gullmaren p. 334			
c. 4·4		2·5		3		4·2		c. 5·5		0		0·3				. . . . Samples: height in *m* above the sea	
1–2	2<	1–2	2<	1–2	2<	1–2	2<	1–2	2<	1–2	2<	1–2	2<	1–2	2<	. . . . Coarseness of material in *mm*	
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1 *Venus gallina* L. (b)	prt
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	2 › *sp.*	
—	—	120	50	200	110	80	45	—	5	150	60	300	160	525	25	3 *Timoclea ovata* PENN. (b)	
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	4 *Tapes decussatus* L. (l)	
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	5 *Lucinopsis undata* PENN. (l)	
—	—	—	—	—	—	—	—	—	—	—	8	—	—	38	3	6 *Axinus flexuosus* MONT. (b)	
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	7 › *Sarsi* PHIL. (b)	
—	—	—	—	—	5	—	—	—	—	—	—	—	—	—	—	8 › *sp.*	
—	—	—	—	—	—	—	—	—	—	—	—	—	—	38	5	9 *Cyamium minutum* FABR. (b)	
—	—	—	—	—	—	20	—	—	—	—	—	—	—	—	—	10 *Lasaea rubra* MONT. (l)	
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	11 *Kellia suborbicularis* MONT. (b)	
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	12 *Montacuta substriata* MONT. (b)	
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	13 *Tellimya ferruginosa* MONT. (b)	
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	14 *Mactra elliptica* BROWN (b)	
—	—	—	—	20	—	80	25	15	15	25	30	75	400	—	—	15 › *subtruncata* DA COSTA (l)	
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	16 *Abra cf. nitida* MÜLL. (b)	
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	17 *Tellina pusilla* PHIL.* (b)	
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	18 *Psammobia vespertina* CHEMN. (l)	
—	—	—	—	—	—	—	15	—	—	—	—	—	—	—	—	19 *Thracia papyracea* POLI (l)	
—	—	40	325	—	—	—	—	—	—	—	—	50	—	—	—	20 › *sp.*	
—	—	70	5	25	5	60	70	—	—	13	8	—	—	38	13	21 *Corbula gibba* OLIVI (l)	
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	22 *Antalis entalis* L. (b)	
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	23 *Siphonentalis lofotensis* M. SARS (b)	
—	+	240	393	245	160	240	165	15	20	288	151	425	580	865	104	. . . . Pelecypoda: sum	
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	5	24 *Nacella pellucida* L. (b)	
—	—	—	—	—	—	—	—	—	—	—	15	+	—	—	5	25 *Emarginula fissura* L. (l)	
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	26 *Capulus hungaricus* L. (l)	
—	—	—	—	—	—	—	30	30	—	—	15	50	20	—	—	27 *Lacuna pallidula* DA COSTA (b)	
—	—	—	—	—	—	—	—	—	—	—	—	150	—	75	—	28 *Alvania reticulata* MONT. (l)	
40	—	140	—	250	—	80	—	30	—	—	—	50	—	825	—	29 › *punctura* MONT. (l)	
160	—	120	—	200	30	240	20	30	—	50	—	50	—	150	—	30 *Rissoa violacea* DESM. (l)	
18 000	10	3 700	5	6 500	—	4 400	40	180	—	3 750	—	3 500	—	1 650	—	31 › *parva* DA COSTA (l)	
—	—	—	—	100	—	—	—	—	—	—	—	—	—	—	—	32 › *inconspicua* ALD. (l)	
—	—	—	—	—	—	—	—	—	—	—	—	—	—	150	—	33 *Turritella terebra* L. (l)	prt
4 200	450	1 360	55	2 125	140	18 000	3 550	7 500	300	14 375	675	10 000	1 040	11 700	5	34 *Bittium reticulatum* DA COSTA (l)	

Primo-post-glacial regressional and post-glacial transgressional immigrants

409 . . . . Continued on p.

27†—170108. G. F. F. 1917.

Shell-beds from the primo-post-glacial

Continued from p. 382

Group			Nyckleby p. 284				Mörhult I p. 285						Summinge p. 286		Lunnevik I p. 287		→			
		Samples: height in *m* above the sea	c. 22·3		c. 22·6		c. 9		c. 10		c. 12		10		c. 17		c. 2		c. 3	
		Coarseness of material in *mm*	1—2	2<	1—2	2<	1—2	2<	1—2	2<	1—2	2<	1—2	2<	1<2	2<	1—2	2<	1—2	2<
Primo-post-glacial regressional and post-glacial transgressional immigrants; prt	1	*Triforis perversa* L. (l)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	2	*Turbonilla lactea* L. (l)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	3	*Odostomia cf. albella* Lov. (l)	—	—	—	—	—	—	40	—	120	—	—	—	390	—	120	—	330	—
	4	› *cf. rissoides* Hanl. (l)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	5	*Eulimella acicula* Phil. (l)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	6	› *sp.*	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	7	*Buccinum undatum* L. (b)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	8	*Utriculus obtusus* Turt. (b)	—	—	—	—	—	—	—	—	—	—	+	—	—	—	—	—	—	—
	9	› *truncatulus* Brug. (l)	180	—	200	—	—	—	—	—	—	—	90	—	—	—	60	—	120	—
	10	*Pleurobranchus plumula* Mont.* (l)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
		Gastropoda: sum	1 020	10	1 850	70	120	20	1 280	60	820	30	390	10	1 920	420	300	—	690	15
	11	*Waldheimia cranium* Müll. (a)	—	5	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
prt	12	*Echinus esculentus* L.	+	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	13	*Echinocyamus pusillus* Müll.	+	210	50	275	—	20	360	520	40	120	—	—	—	10	—	30	30	15
Forms immigrated during the post-glacial transgression maximum; ptm	14	*Lepidopleurus cancellatus* Sow. (b)																		
	15	*Callochiton laevis* Penn.* (l)																		
		Amphineura: sum																		
	16	*Hinnites pusio* L. (l)																		
	17	*Solecurtus antiquatus* Pult. (l)																		
		Pelecypoda: sum																		
	18	*Caecum glabrum* Mont. (l)																		
	19	*Turbonilla indistincta* Mont. (l)																		
	20	*Odostomia unidentata* Mont. (b)																		
	21	*Eulima distorta* Desh. (l)																		
	22	*Utriculus mammillatus* Phil. (l)																		
	23	*Diaphana hyalina* Turt. (b)																		
	24	› *expansa* Jeffr. (b)																		
	25	*Spirialis retroversus* Flemg. (l)																		
		Gastropoda: sum																		
	26	*Terebratulina caput serpentis* L. (b)																		
ptm	27	*Parechinus miliaris* Leske*																		

Continued on p.

regression and the post-glacial transgression

383

← Otterö A, p. 271 | Fjällbacka, p. 276 | Over!

c. 4		c. 5		c. 6		c. 7		c. 7·7		cc. 16·3		cc. 16·8		cc. 17·3		. . . .
1—2	2<	1—2	2<	1—2	2<	1—2	2<	1—2	2<	1—2	2<	1—2	2<	1—2	2<	. . . .
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1 . . .
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	2 . . .
1 350	—	800	—	570	—	400	—	240	—	60	—	2 000	—	360	—	3 . . .
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	4 . . .
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	5 . . .
—	—	—	—	—	—	—	—	30	—	—	—	—	—	—	—	6 . . .
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	7 . . .
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	8 . . .
30	—	560	—	—	—	50	—	60	—	30	—	—	—	90	—	9 . . .
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	10 . . .
1 980	20	1 640	—	1 710	—	14 200	4 240	25 650	3 370	330	20	2 280	30	540	—	. . . .
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	11 . . .
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	12 . . .
60	90	40	20	30	10	150	100	—	10	—	—	—	—	—	—	13 . . .

Shell-beds from the post-

384

	Fjällbacka Over! p. 276										Löndal p. 288					
. . .	cc. 17·8		cc. 18·3		cc. 19·3		cc. 19·8		cc. 20		cc. 9·5		cc. 11·5		cc. 13·5	
. . .	1—2	2<	1—2	2<	1—2	2<	1—2	2<	1—2	2<	1—2	2<	1—2	2<	1—2	2<
. . 1	—	—	—	—	—	—	—	—	30	—	—	—	40	—	40	—
. . 2	—	—	—	—	—	—	—	—	—	—	40	—	—	—	—	—
. . 3	600	—	1 050	—	240	—	210	—	—	—	120	—	400	—	40	—
. . 4	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
. . 5	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
. . 6	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
. . 7	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
. . 8	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
. . 9	60	—	180	—	90	—	60	—	30	—	40	—	80	—	—	—
. . 10	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
. . .	930	10	1 530	10	4 920	570	4 900	380	1 890	180	600	15	11 080	750	3 840	405
. . 11	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
. . 12	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
. . 13	—	—	—	—	—	—	—	—	—	—	—	15	40	70	120	90

glacial transgression

385

Otterö B p. 271						Hvalö p. 289				Mörhult II p. 290				
c. 3·8		c. 4·5		c. 5·2		c. 3		c. 5		c. 3·3		c. 4		. . . .
1–2	2<	1–2	2<	1–2	2<	1–2	2<	1–2	2<	1–2	2<	1–2	2<	. . . .
—	—	30	5	30	—	100	—	100	—	—	—	—	—	1 . . .
—	—	—	—	—	—	—	—	—	—	—	—	—	—	2 . . .
60	—	30	—	30	—	100	—	250	—	—	—	—	—	3 . . .
—	—	—	—	—	—	—	—	—	—	—	—	—	—	4 . . .
—	—	—	—	—	—	—	—	—	—	—	—	—	—	5 . . .
—	—	—	—	—	—	—	—	—	—	—	—	—	—	6 . . .
—	—	—	—	—	—	—	—	—	—	—	—	—	—	7 . . .
—	—	—	—	—	—	—	—	—	—	—	—	—	—	8 . . .
—	—	—	—	—	—	50	—	50	—	—	—	—	—	9 . . .
—	—	—	—	—	—	—	50	—	—	—	—	—	—	10 . . .
14 400	1 505	17 590	2 095	30 840	2 900	17 050	2 070	11 850	1 560	450	20	9 000	300	. . . .
—	—	—	—	—	—	—	—	—	—	—	—	—	—	11 . . .
—	—	—	—	—	—	—	—	—	—	—	—	—	—	12 . . .
—	25	—	—	—	—	—	40	100	20	—	—	—	—	13 . . .

Shell-beds from the post-glacial transgression

386

	Rössö-Långö A p. 279				Rössö-Långö C p. 279				Torse-röd p. 281		Smittmyren p. 291				Fjälla p. 282		N. Holt p. 283	
. . .	7		7·9		7		7·8		cc. 0·5		30·6		30·9		31		c. 31·5	
. . .	1–2	2<	1–2	2<	1–2	2<	1–2	2<	1–4	2<	1–2	2<	1–2	2<	1–2	2<	1–2	2<
. . 1	—	—	25	—	—	—	—	50	—	—	—	—	—	—	—	—	35	—
. . 2	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
. . 3	—	—	—	—	—	—	—	—	150	—	1 440	—	90	—	—	—	—	—
. . 4	50	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
. . 5	—	—	25	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
. . 6	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
. . 7	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
. . 8	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
. . 9	—	—	—	—	—	—	—	—	30	—	60	—	60	—	—	—	210	—
. . 10	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
. . .	6 400	450	8 250	380	7 100	525	9 300	1 030	3 570	510	1 860	80	5 070	1 200	96	6	8 960	2 600
. . 11	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
. . 12	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
. . 13	—	—	—	—	—	—	—	—	—	10	—	—	30	4	—	—	—	—

Shell-beds from the post-glacial transgression maximum

387

Medvik A p. 292		Medvik B p. 292				L u n n e v i k II p. 294										
c. 26		c. 29		c. 31		c. 27·2		c. 28·5		c. 30		c. 32·5		c. 34		. . . .
1–2	2<	1–2	2<	1–2	2<	1–2	2<	1–2	2<	1–2	2<	1–2	2<	1–2	2<	. . . .
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1 . . .
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	2 . . .
—	—	—	—	—	—	60	—	500	—	500	5	480	—	940	—	3 . . .
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	4 . . .
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	5 . . .
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	6 . . .
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	7 . . .
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	8 . . .
—	—	—	—	—	—	—	—	—	—	60	—	—	—	140	—	9 . . .
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	10 . . .
2 415	130	650	75	900	90	720	30	4 240	1 180	6 130	1 530	3 280	980	1 360	10	. . . .
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	11 . . .
—	—	—	—	—	—	+	—	—	—	—	—	+	—	—	—	12 . . .
—	—	—	—	—	—	—	—	—	—	—	—	—	10	—	—	13 . . .
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	14 . . .
—	—	—	—	—	—	—	—	—	—	—	—	3	—	—	—	15 . . .
—	—	—	—	—	—	—	—	—	—	—	—	3	—	—	—	. . . .
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	16 . . .
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	17 . . .
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	. . . .
—	—	—	—	—	—	—	—	+	—	—	—	—	—	—	—	18 . . .
—	—	—	—	30	—	—	—	—	—	—	—	—	—	—	—	19 . . .
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	20 . . .
—	—	—	—	—	—	—	—	—	—	—	—	20	—	—	—	21 . . .
—	—	—	—	—	—	—	—	20	—	—	—	—	—	—	—	22 . . .
—	—	—	—	—	—	—	—	—	—	—	—	20?	—	—	—	23 . . .
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	24 . . .
—	—	—	—	—	—	+	—	+	—	—	—	—	—	+	—	25 . .
—	—	—	—	30	—	+	—	20	—	—	—	40	—	+	—	. . .
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	26 . .
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	27 . .

Shell-beds from the post-glacial

388

	Rössö p. 296										Hällan p. 297		Hälle I p. 298	
. . .	c. 21		c. 21·7		c. 22·2		c. 23·3		c. 23·6		c. 36·5		c. 39	
. . .	1—2	2<	1—2	2<	1—2	2<	1—2	2<	1—2	2<	1—2	2<	1—2	2<
. . 1	—	—	25	—	—	—	—	—	50	5	50	—	—	—
. . 2	—	—	—	—	—	—	—	—	—	—	—	—	—	—
. . 3	225	—	225	—	175	—	425	—	450	—	—	—	—	—
. . 4	—	—	—	—	—	—	—	—	—	—	—	—	—	—
. . 5	—	—	—	—	—	—	—	—	—	—	—	—	—	—
. . 6	—	—	—	—	—	—	—	—	—	—	—	—	—	—
. . 7	—	—	—	—	—	—	—	—	—	—	—	—	—	—
. . 8	—	—	25	—	—	—	—	—	50	—	—	—	—	—
. . 9	25	—	50	—	—	—	—	—	50	—	—	—	100	—
. . 10	—	—	—	—	—	—	—	—	—	—	—	—	—	—
. . .	625	5	1 350	55	2 375	120	8 800	560	5 650	115	1 400	56	2 900	685
. . 11	—	—	—	—	—	—	—	—	—	—	—	—	—	—
. . 12	+	—	+	—	—	—	+	—	+	—	—	—	—	—
. . 13	—	+	75	65	50	25	100	30	50	50	—	—	—	—
. . 14	—	—	—	—	—	—	—	—	—	—	—	—	—	—
. . 15	—	—	—	—	—	—	—	—	—	—	—	—	—	—
. . .	—	—	—	—	—	—	—	—	—	—	—	—	—	—
. . 16	—	—	—	—	—	—	—	—	—	—	—	—	—	—
. . 17	—	—	—	—	—	—	—	—	—	—	—	—	—	—
. . .	—	—	—	—	—	—	—	—	—	—	—	—	—	—
. . 18	—	—	—	—	—	—	—	—	+	—	—	—	—	—
. . 19	—	—	—	—	—	—	—	—	—	—	—	—	—	—
. . 20	—	—	—	—	—	—	—	—	—	—	—	—	—	—
. . 21	—	—	—	—	—	—	—	—	—	—	—	—	—	—
. . 22	—	—	—	—	—	—	—	—	—	—	—	—	—	—
. . 23	—	—	—	—	—	—	—	—	—	—	—	—	—	—
. . 24	—	—	—	—	—	—	—	—	+?	—	—	—	—	—
. . 25	—	—	—	—	—	—	—	—	+	—	—	—	—	—
. . .	—	—	—	—	—	—	—	—	+	—	—	—	—	—
. . 26	—	—	—	—	—	—	—	3	—	—	—	—	—	—
. . 27	—	—	+	—	—	—	+	5	—	—	—	—	—	—

transgression maximum

389

Stare				Sandbogen						Efvenås		
p. 302				p. 303						p. 304		
c. 31		c. 32		c. 34		c. 35		c. 36		28·5		. . . .
1–2	2<	1–2	2<	1–2	2<	1–2	2<	1–2	2<	1–2	2<	. . . .
—	—	30	—	—	—	—	—	—	—	—	—	1 . . .
—	—	—	—	—	—	—	—	—	—	—	—	2 . . .
—	—	—	—	40	—	80	—	360	—	—	—	3 . . .
—	—	—	—	—	—	—	—	—	—	—	—	4 . . .
—	—	—	—	—	—	—	—	—	—	—	—	5 . . .
—	—	—	—	—	—	—	—	—	—	—	—	6 . . .
—	—	—	—	—	—	—	—	—	—	—	—	7 . . .
—	—	—	—	—	—	—	—	—	—	—	—	8 . . .
25	—	—	—	—	—	—	—	—	—	—	+	9 . . .
—	—	—	—	—	—	—	—	—	—	—	—	10 . . .
12 400	615	18 090	600	120	—	840	—	16 560	6 310	770	230	. . . .
—	—	—	—	—	—	—	—	—	—	—	—	11 . . .
—	—	—	—	—	—	—	—	—	—	+	—	12 . . .
—	—	—	—	—	—	—	—	—	20	—	—	13 . . .
—	—	—	—	—	—	—	—	—	—	—	—	14 . . .
—	—	—	—	—	—	—	—	—	—	—	—	15 . . .
—	—	—	—	—	—	—	—	—	—	—	—	. . . .
—	—	—	—	—	—	—	—	—	—	—	—	16 . . .
—	—	—	5	—	—	—	—	—	—	—	—	17 . . .
—	—	—	5	—	—	—	—	—	—	—	—	. . . .
—	—	—	—	—	—	—	—	—	—	—	—	18 . . .
—	—	—	—	—	—	—	—	—	—	—	—	19 . . .
—	—	—	—	—	—	—	—	—	—	—	—	20 . . .
—	—	—	—	—	—	—	—	—	—	—	—	21 . . .
—	—	—	—	—	—	—	—	—	—	—	—	22 . . .
—	—	—	—	—	—	—	—	—	—	—	—	23 . . .
—	—	—	—	—	—	—	—	—	—	—	—	24 . . .
—	—	—	—	—	—	—	—	—	—	—	—	25 . . .
—	—	—	—	—	—	—	—	—	—	—	—	. . . .
—	—	—	—	—	—	—	—	—	—	—	—	26 . . .
—	—	—	—	—	—	—	—	—	—	—	—	27 . . .

Shell-beds from the sero-

390

	Kilarna p. 306		Lund p. 315				Holke-dalskilen p. 316		Skälleröd p. 317							
. . . .	c. 22		c. 25·1		c. 25·6		25·9		c. 21·6		c. 22·6		c. 23·5		c. 23·8	
. . . .	1—2	2<	1—2	2<	1—2	2<	1—2	2<	1—2	2<	1—2	2<	1—2	2<	1—2	2<
. . . . 1	25	—	25	—	50	—	30	10	—	—	80	—	40	—	40	—
. . . . 2	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
. . . . 3	—	—	—	—	100	—	30	—	—	—	40	—	—	—	—	—
. . . . 4	75	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
. . . . 5	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
. . . . 6	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
. . . . 7	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
. . . . 8	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
. . . . 9	75	—	50	—	—	—	—	—	—	—	200	—	80	—	40	—
. . . . 10	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
. . . .	4 225	2 260	7 675	3 440	10 000	1 500	20 490	10 220	2 490	335	21 640	2 380	31 320	1 060	21 080	1 160
. . . . 11	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
. . . . 12	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
. . . . 13	—	—	—	—	—	—	—	20	—	—	200	100	—	—	—	—
. . . . 14	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
. . . . 15	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
. . . .	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
. . . . 16	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
. . . . 17	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
. . . .	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
. . . . 18	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
. . . . 19	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
. . . . 20	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
. . . . 21	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
. . . . 22	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
. . . . 23	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
. . . . 24	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
. . . . 25	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
. . . .	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
. . . . 26	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
. . . . 27	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
. . . .																

410

post-glacial regression

391

Prästängen p. 318		Lejonkällan p. 320		T o r s e r ö d p. 307						Sydkoster p. 322		Grandalen p. 323		
21		22		cc. 1·5		cc. 3·5		cc. 5·5		c. 15		c. 14		. . . .
1–2	2<	1–2	2<	1–2	2<	1–2	2<	1–2	2<	1–2	2<	1–2	2<	. . . .
40	—	40	—	—	—	—	—	—	10	—	—	80	—	1 . . .
—	—	—	—	—	—	—	—	—	—	—	—	—	—	2 . . .
—	—	—	—	—	—	120	—	270	—	60	—	—	—	3 . . .
—	—	—	—	—	—	—	—	—	—	—	—	—	—	4 . . .
—	—	—	—	—	—	—	—	—	—	—	—	—	—	5 . . .
—	—	—	—	30	—	—	—	—	—	—	—	—	—	6 . . .
—	—	—	—	—	—	—	—	—	—	—	—	—	—	7 . . .
—	—	—	—	—	—	—	—	—	—	—	—	—	—	8 . . .
40	—	160	—	60	—	120	—	30	—	—	—	—	—	9 . . .
—	—	—	—	—	—	—	—	—	—	—	—	—	—	10 . . .
14 800	2 220	24 680	2 310	14 970	1 370	6 570	450	13 830	980	37 020	530	75 760	4 020	. . . .
—	—	—	—	—	—	—	—	—	—	—	—	—	—	11 . . .
—	—	—	—	—	—	—	—	—	—	—	—	—	—	12 . . .
—	+	—	—	—	—	—	—	—	10	—	—	—	—	13 . . .
—	—	—	—	—	—	—	—	—	—	—	—	—	—	14 . . .
—	—	—	—	—	—	—	—	—	—	—	—	—	—	15 . . .
—	—	—	—	—	—	—	—	—	—	—	—	—	—	. . . .
—	—	—	—	—	—	—	—	—	—	—	—	—	—	16 . . .
—	—	—	—	—	—	—	—	—	—	—	—	—	—	17 . . .
—	—	—	—	—	—	—	—	—	—	—	—	—	—	. . . .
—	—	—	—	—	—	—	—	—	—	—	—	—	—	18 . . .
—	—	—	—	—	—	30	—	—	—	—	—	—	—	19 . . .
—	—	—	—	—	—	—	—	—	—	—	—	—	—	20 . . .
—	—	—	—	—	—	—	—	—	—	—	—	—	—	21 . . .
—	—	—	—	—	—	—	—	—	—	—	—	—	—	22 . . .
—	—	—	—	—	—	—	—	—	—	—	—	—	—	23 . . .
—	—	—	—	—	—	—	—	—	—	—	—	—	—	24 . . .
—	—	—	—	—	—	—	—	—	—	—	—	—	—	25 . . .
—	—	—	—	—	—	30	—	—	—	—	—	—	—	. . . .
—	—	—	—	—	—	—	—	—	—	—	—	—	—	26 . . .
—	—	—	—	—	—	—	—	—	—	—	—	—	—	27 . . .

410 . . . .

Shell-beds from the sero-

392

	Tofterna A												Tofterna C	
	p. 308												p. 308	
. . .	2		3		4		5		6		7		c. 7·5	
. . .	1–2	2<	1–2	2<	1–2	2<	1–2	2<	1–2	2<	1–2	2<	1–2	2<
. . 1	—	—	—	—	—	—	—	—	—	—	—	—	—	—
. . 2	—	—	—	—	—	—	—	—	—	—	—	—	—	—
. . 3	—	—	—	—	—	—	—	—	—	—	—	—	40	—
. . 4	—	—	—	—	—	—	—	—	—	—	—	—	—	—
. . 5	100	—	25	—	—	—	—	—	+?	—	25	—	—	—
. . 6	—	—	—	—	—	—	—	—	—	—	—	—	—	—
. . 7	—	—	—	—	—	—	—	—	—	—	—	—	—	—
. . 8	—	—	—	—	—	—	—	—	—	—	—	—	—	—
. . 9	—	—	—	—	—	—	—	—	—	—	—	—	—	—
. . 10	—	—	—	—	—	—	—	—	—	—	—	—	—	—
. . .	17 775	10	9 550	25	5 400	5	5 625	250	11 825	1 295	15 350	945	8 200	3 340
. . 11	—	—	—	—	—	—	—	—	—	—	—	—	—	—
. . 12	—	—	+	—	+	—	+	—	—	—	—	—	—	—
. . 13	—	—	—	—	—	—	—	—	—	—	—	—	—	—
. . 14	—	—	—	—	—	—	—	—	—	—	—	—	—	—
. . 15	—	—	—	—	—	—	—	—	—	—	—	—	—	—
. . .	—	—	—	—	—	—	—	—	—	—	—	—	—	—
. . 16	—	—	—	—	—	—	—	—	—	—	—	—	—	—
. . 17	—	—	—	—	—	—	—	—	—	—	—	—	—	—
. . .	—	—	—	—	—	—	—	—	—	—	—	—	—	—
. . 18	+ + +	—	+ +	—	+	—	+	—	+	—	—	—	—	—
. . 19	—	—	—	—	—	—	—	—	+	—	—	—	—	—
. . 20	—	—	—	—	—	—	—	—	—	—	—	—	—	—
. . 21	25	—	—	—	—	—	—	—	—	—	—	—	—	—
. . 22	—	—	—	—	—	—	—	—	—	—	—	—	—	—
. . 23	—	—	—	—	—	—	—	—	—	—	—	—	—	—
. . 24	—	—	—	—	—	—	—	—	—	—	—	—	—	—
. . 25	+ + +	—	+ + +	—	+ +	—	+	—	+	—	—	—	—	—
. . .	25	—	+	—	+	—	+	—	+	—	—	—	—	—
. . 26	—	—	—	—	—	—	—	5	—	—	—	—	—	—
. . 27	—	—	—	—	—	—	—	—	—	—	—	—	—	—

. . . 410

post-glacial regression

393

Nötholmen A p. 310								Nötholmen B p. 310					Rössö-Långö A p. 313		
0·5		1·5		2·5		3·5		6·6		7·4	7·6		8·3		. . . .
1–2	2<	1–2	2<	1–2	2<	1–2	2<	1–2	2<	2<	1–2	2<	1–2	2<	. . . .
20	—	20	—	—	—	20	—	—	—	10	50	—	30	—	1 . . .
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	2 . . .
—	—	40	—	600	—	380	—	—	—	—	—	—	—	—	3 . . .
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	4 . . .
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	5 . . .
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	6 . . .
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	7 . . .
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	8 . . .
100	10	120	—	100	—	80	—	—	—	—	—	—	30	—	9 . . .
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	10 . . .
6 280	1 450	13 800	665	20 780	410	30 100	180	36 150	1 260	1 090	44 500	1 320	11 970	475	. .
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	11 . .
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	12 . .
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	13 . .
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	14 . .
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	15 . .
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	. .
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	16 . .
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	17 . .
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	. .
+	—	+	—	+ +	—	+	—	—	—	—	—	—	—	—	18 . .
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	19 . .
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	20 . .
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	21 . .
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	22 . .
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	23 . .
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	24 . .
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	25 . .
+	—	+	—	+	—	+	—	—	—	—	—	—	—	—	. .
10	—	—	—	—	—	—	—	—	—	—	—	—	—	—	26 . .
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	27 . .

410

. . .

Shell-beds from the sero-

394

	Rössö-Långö B p. 313				Svälte p. 325						Kjell-viken p. 326		Kebal p. 327		Bagge-röd p. 328	
...	8·3		8·7		c. 1·4		c. 3·4		c. 4		5·3		c. 1·5		0·2	
...	1–2	2<	1–2	2<	1–2	2<	1–2	2<	1–2	2<	1–2	2<	1–2	2<	1–2	2<
... 1	100	—	—	—	—	—	—	—	—	—	80	—	100	40	40	10
... 2	—	—	—	—	—	—	—	—	30	—	—	—	—	—	—	—
... 3	—	—	—	—	30	—	160	—	—	—	120	—	—	—	—	—
... 4	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
... 5	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
... 6	—	—	—	—	—	—	40	—	—	—	—	—	—	—	—	—
... 7	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
... 8	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
... 9	—	—	100	—	—	—	80	—	—	—	40	—	50	—	40	—
... 10	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
...	26 800	1 550	26 400	400	4 830	340	14 120	1 090	9 750	435	11 040	390	23 250	5 040	24 600	4310
... 11	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
... 12	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
... 13	—	—	—	—	30	75	280	90	—	15	—	—	50	80	—	—
... 14	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
... 15	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
...	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
... 16	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
... 17	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
...	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
... 18	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
... 19	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
... 20	—	—	—	—	—	—	—	—	30	—	—	—	—	—	—	—
... 21	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
... 22	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
... 23	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
... 24	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
... 25	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
...	—	—	—	—	—	—	—	—	30	—	—	—	—	—	—	—
... 26	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
... 27	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

....

post-glacial regression. Recent

395 . . . . Continued from p.

rhult II p. 329		Nordkoster p. 330				Nöddö p. 331		Otterö B p. 315		Karholmen p. 332		Brattskär p. 333		Gullmaren p. 334			
4·4		2·5		3		4·2		c. 5·5		0		0·3				. . . . Samples: height in *m* above the sea	
-2	2<	1—2	2<	1—2	2<	1—2	2<	1—2	2<	1—2	2<	1—2	2<	1—2	2<	. . . . Coarseness of material in *mm*	
—	—	—	—	25	—	—	—	—	—	50	15	100	—	75	—	. . . . . 1 *Triforis perversa* L. (l)	prt
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	. . . . . 2 *Turbonilla lactea* L. (l)	Primo-post-glacial regressional and post-glacial transgressional immigrants
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	. . . . . 3 *Odostomia cf. albella* Lov. (l)	
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	. . . . . 4 › *cf. rissoides* Hanl. (l)	
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	. . . . . 5 *Eulimella acicula* Phil. (l)	
—	—	—	—	—	—	—	—	60	—	—	—	—	—	—	—	. . . . . 6 › *sp.*	
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	. . . . . 7 *Buccinum undatum* L. (b)	
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	. . . . . 8 *Utriculus obtusus* Turt. (b)	
—	—	—	—	25	—	80	—	30	—	—	—	—	—	150	—	. . . . . 9 › *truncatulus* Brug. (l)	
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	. . . . . 10 *Pleurobranchus plumula* Mont. * (l)	
00	460	5 320	60	9 225	170	22 800	3 640	7 860	300	18 225	720	13 900	1 060	14 775	15	. . . . Gastropoda: sum	
—	—	—	—	—	—	—	—	—	—	—	—	—	10	—	—	. . . . . 11 *Waldheimia cranium* Müll. (a)	
—	—	—	—	—	—	—	—	—	—	—	—	—	—	+	—	. . . . . 12 *Echinus esculentus* L.	prt
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	5	. . . . . 13 *Echinocyamus pusillus* Müll.	
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	. . . . . 14 *Lepidopleurus cancellatus* Sow. (b)	ptm
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	. . . . . 15 *Callochiton laevis* Penn.* (l)	
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	. . . . Amphineura: sum	Forms immigrated during the post-glacial transgression maximum
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	. . . . . 16 *Hinnites pusio* L. (l)	
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	. . . . . 17 *Solecurtus antiquatus* Pult. (l)	
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	. . . . Pelecypoda: sum	
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	. . . . . 18 *Coecum glabrum* Mont. (l)	
—	—	20	—	—	—	—	—	—	—	—	—	—	—	—	—	. . . . . 19 *Turbonilla indistincta* Mont. (l)	
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	. . . . . 20 *Odostomia unidentata* Mont. (b)	
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	. . . . . 21 *Eulima distorta* Desh. (l)	
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	. . . . . 22 *Utriculus mammillatus* Phil. (l)	
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	. . . . . 23 *Diaphana hyalina* Turt. (b)	
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	. . . . . 24 › *expansa* Jeffr. (b)	
—	—	—	—	—	—	—	—	—	—	—	—	—	—	+	—	. . . . . 25 *Spirialis retroversus* Flemg. (l)	
—	—	20	—	—	—	—	—	—	—	—	—	—	10	+	—	. . . . Gastropoda: sum	
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	. . . . . 26 *Terebratulina caput serpentis* L. (b)	ptm
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	. . . . . 27 *Parechinus miliaris* Leske *	

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Shell-beds from the sero-

	Continued from p.	404	405	406								407	
		Holke-dals-kilen p. 316	Torse-röd p. 307	Tofterna A p. 308					Nötholmen A p. 310				Nöt-holm B p. 31
	Samples: height in *m* above the sea	25·9	cc. 1·5	2		3	4	5	0·5	1·5	2·5	3·5	7·4
	Coarseness of material in *mm*	2<	2<	1–2	2<	1–2	1–2	1–2	2<	2<	1–2	1–2	2<
Sero-post-glacial regressional immigrants	1 *Lima Loscombi* Sow. (l)	—	—	—	—	—	—	—	—	—	—	—	—
spr	2 *Portlandia frigida* Torell (b)	—	—	38	—	13	—	—	—	—	—	—	—
	3 *Isocardia cor* L. (l)	—	—	—	—	—	—	—	—	—	—	—	—
	4 *Venus fasciata* Don. (l)	—	—	13	3	—	—	—	—	—	—	—	—
	5 *Dosinia lincta* Pulten (l)	—	—	—	—	—	—	—	—	—	—	—	—
	6 *Montacuta Vöringi* Friele (b)	—	—	—	—	—	—	—	—	—	—	—	—
	7 *Abra prismatica* Mont. (b)	—	—	—	5	—	—	—	—	—	—	—	—
	8 *Macoma tenuis* da Costa * (b)	—	—	—	—	—	—	—	—	—	—	—	—
	9 *Psammobia ferröensis* Chemn. (b)	—	—	—	—	—	—	—	—	—	—	—	5
	10 › *sp.*	—	—	—	—	—	—	—	—	—	—	—	—
	11 *Arcinella plicata* Mont. (b)	—	—	—	—	—	—	—	—	—	—	—	—
	Pelecypoda: sum	—	—	51	8	13	—	—	—	—	—	—	5
	12 *Lunatia Montagui* Forb. (b)	—	—	—	—	—	—	—	—	—	—	—	—
	13 *Cingula soluta* Phil. (b)	—	—	—	—	—	—	25	—	—	—	—	—
	14 *Alvania cimicoides* Forb. (b)	—	—	—	—	—	—	—	—	—	20	—	—
	15 *Scalaria communis* Lamk. (l)	10	—	—	—	—	—	—	—	—	—	—	—
	16 *Parthenia interstincta* Mont. (l)	—	—	25	—	25	—	—	—	—	—	20	—
	17 *Eulimella ventricosa* Forb. (l)	—	—	25	—	—	—	—	—	—	—	—	—
	18 *Eulima bilineata* Ald. (l)	—	—	25	—	—	—	—	—	—	—	—	—
	19 *Homalogyra atomus* Phil. (l)	—	—	+	—	+	+	—	—	—	—	—	—
	20 *Clathurella Leufroyi* Mich. (l)	—	—	—	—	—	—	—	—	—	—	—	—
	21 *Mangelia costata* Don. (l)	—	—	—	—	—	—	—	—	—	—	—	—
	22 › *sp.*	—	—	—	—	—	—	—	5	—	—	—	—
	23 *Actaeon tornatilis* L. (l)	—	10	—	—	—	—	—	—	+	—	—	—
spr	24 *Philine quadrata* Wood (a)	—	—	—	—	—	—	—	—	—	—	—	—
	Gastropoda: sum	10	10	75	—	25	+	25	5	+	20	20	—
	25 *Terebratulina septentrionalis* Couth. (a)	—	—	—	—	—	—	—	—	—	—	—	—

Here are included only such samples or fractions in which sero-post-glacial post-glacial regression 408   409   Recent

Continued from p.

Rössö-Långö B	Svälte			Kjell-viken	Kebal	Bagge-röd	Nord-koster	Nöddö	Gull-maren		
p. 313	p. 325			p. 326	p. 327	p. 328	p. 330	p. 331	p. 334		
8·3	c. 1·4		c. 4	5·3	c. 1·5	0·2	3	4·2			Samples: height in *m* above the sea
2<	1—2	2<	2<	2<	2<	2<	2<	1—2	1—2	2<	Coarseness of material in *mm*
—	—	—	—	—	—	5	—	—	—	3	1 *Lima Loscombi* Sow. (l)
—	—	—	—	—	—	—	—	—	—	—	2 *Portlandia frigida* Torell (b)
—	—	—	—	—	—	—	—	—	—	—	3 *Isocardia cor* L. (l)
—	—	—	—	—	—	—	—	—	—	—	4 *Venus fasciata* Don. (l)
—	—	5	—	—	—	—	—	—	—	—	5 *Dosinia lincta* Pulten (l)
—	15	—	—	—	—	—	—	—	—	—	6 *Montacuta Vöringi* Friele (b)
—	—	—	—	—	—	—	—	—	—	—	7 *Abra prismatica* Mont. (b)
—	—	—	—	5	—	—	—	45	—	—	8 *Macoma tenuis* da Costa* (b)
—	—	—	—	—	—	—	—	—	—	—	9 *Psammobia ferröensis* Chemn. (b)
+	—	—	—	—	—	—	—	—	—	—	10 › *sp.*
—	—	—	3	—	—	—	5	—	—	—	11 *Arcinella plicata* Mont. (b)
+	15	5	3	5	—	5	5	45	—	3	Pelecypoda: sum
—	—	—	—	—	—	—	—	—	—	—	12 *Lunatia Montagui* Forb. (b)
—	—	—	—	—	—	—	—	—	—	—	13 *Cingula soluta* Phil. (l)
—	—	—	—	—	—	—	—	—	—	—	14 *Alvania cimicoides* Forb. (b)
—	—	—	—	—	—	—	—	—	—	—	15 *Scalaria communis* Lamk. (l)
—	—	—	—	—	—	—	—	—	—	—	16 *Parthenia interstincta* Mont. (l)
—	—	—	—	—	—	—	—	—	—	—	17 *Eulimella ventricosa* Forb. (l)
—	—	—	—	—	—	—	—	—	+	—	18 *Eulima bilineata* Ald. (l)
—	—	—	—	—	—	—	—	—	—	—	19 *Homalogyra atomus* Phil. (l)
—	—	—	—	—	20	—	—	—	—	—	20 *Clathurella Leufroyi* Mich. (l)
—	—	—	—	—	—	—	—	—	—	—	21 *Mangelia costata* Don. (l)
—	—	—	—	—	—	—	—	—	—	—	22 › *sp.*
—	—	—	—	—	—	—	—	—	—	—	23 *Actaeon tornatilis* L. (l)
—	—	—	—	—	—	—	—	—	—	—	24 *Philine quadrata* Wood (a)
—	—	—	—	—	20	—	—	—	+	—	Gastropoda: sum
—	—	—	—	—	120	—	—	—	—	—	25 *Terebratulina septentrionalis* Couth. (a)

spr

Sero-post-glacial regressional immigrants

spr

…ssional immigrants are represented.

In these tables the numbers give the total of individuals found in th
samples analysed. For further reference, see the text.

		Håfve p. 301		Hälle II p. 321		Tofterna A p. 308		Häl le II p. 3
	Locality: height in *m* above the sea	22·3		16·5		1·5		13
	Samples: »	20·6		14·6	15·1	1·5		13
	Coarseness of material in *mm*	1—2	2<	3<	3<	1—2	2<	3<
Redeposited	*Arca glacialis* Gray (a)	—	—	—	—	—	—	
	Boreochiton marmoreus Fabr. (a)	—	$^{2}/_{3}$	$^{1}/_{6}$	$^{1}/_{3}$	1	$^{1}/_{3}$	
(Gothi-glacial regressional and) fini-glacial transgressional immigrants	*Pecten islandicus* Müll. (a)	—	—	—	—	—	—	
	Mytilus edulis L. (b)	—	+	4	3	24	—	1
	Portlandia lenticula Fabr. (a)	—	—	—	—	—	—	
	Astarte elliptica Brown (a)	—	—	—	—	—	$^{1}/_{2}$	
	Mya truncata L. (a)	—	$^{1}/_{2}$	—	—	—	—	—
	Saxicava rugosa L. (a)	12	2	10	10	44	1	13
	Pelecypoda: sum	12	$2^{1}/_{2}$	14	13	68	$1^{1}/_{2}$	15
	Lepeta caeca Müll. (a)	—	—	—	2	—	—	1
	Litorina litorea L. (b) / » *rudis* Maton (b)	8	2	1	5	—	—	3
	Lacuna divaricata Fabr. (a)	—	—	1	3	60	1	2
	Gastropoda: sum	8	2	2	10	60	1	6
ft	*Balanus crenatus* Brug. (b)	—	+	1	1	4	1	2
	» *porcatus* da Costa (a)	—	+	4	4	—	2	1
	Verruca Strömia Müll. (b)	—	—	23	25	240	17	15
	Balanidae: sum	—	+	28	30	244	20	18
fr	*Lepidopleurus cinereus* L. (l)	$^{2}/_{3}$	—	—	$^{1}/_{6}$	13	—	
	Boreochiton ruber Lowe (a)	1	$^{1}/_{6}$	—	—	11	—	—
	Amphineura: sum	$1^{2}/_{3}$	$^{1}/_{6}$	—	$^{1}/_{6}$	24	—	
	Anomia aculeata L. (b)	—	—	20	12	1 200	22	13
	» *ephippium* L. (b)	2	3	75	105		60	80
	Ostrea edulis L. (l)	+	5 + +	3	—	—	—	2
	Nucula nucleus L. (l)	+	+	—	1	—	2	1

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Continued from p. 412

		Håfve p. 301		Hälle II p. 321		Tofterna A p. 308		Hälle III p. 337
	Locality: height in *m* above the sea	22·3		16·5		1·5		13
	Samples: »	20·6		14·6	15·1	1·5		13
	Coarseness of material in *mm*	1—2	2<	3<	3<	1—2	2<	3<
Fini-glacial regressional immigrants	*Cardium echinatum* L. (l)	—	—	—	—	—	—	1
	» *cf. nodosum* TURT. (b) . .	—	—	1/2	1	—	—	1
	» *cf. exiguum* GMEL. (l) . .	—	1	—	1/2	—	—	1(?)
	Laevicardium norvegicum SPENGEL (l)	—	—	—	1/2	—	—	—
	Tapes sp.	—	—	—	—	—	1/2	—
	Lepton nitidum TURT. (l)	—	—	—	—	4	—	—
	Montacuta bidentata MONT. (l) . . .	4	—	—	—	24	—	—
	Abra sp..	20	1/2	1/2	—	(8)	3	1
	Solen sp.	—	—	—	—	+	—	—
	Pelecypoda: sum	26	9 1/2	99	120	1 236	87 1/2	110
	Patella vulgata L. (b)	—	—	—	1	—	—	—
	Tectura virginea MÜLL. (b).	12	—	18	22	184	20	27
	Gibbula cineraria L. (b)	8	+	5	10	—	12	11
	» *tumida* MONT. (b)	—	—	—	—	48	1	—
	Lunatia intermedia PHIL. (l)	—	2	—	2	36	2	2
	Litorina obtusata L. (b)	—	—	—	—	4	—	—
	Onoba striata MONT. (b)	4	—	—	—	100	—	—
	Rissoa interrupta AD. (l)	—	—	—	—	500	—	—
	Rissostomia membranacea AD. (l). .	—	1	1	—	—	—	1
	Aporrhais pes pelecani L. (l)	—	—	+	—	—	—	—
	Clathurella linearis MONT. (l) . . .	—	—	1	1	—	1	—
	Nassa reticulata L. (l)	+	4	2	+	—	—	2
fr	» *sp.*	—	—	3	6	56	6	19
	Utriculus umbilicatus MONT. (l) . .	—	—	—	—	4	—	—
	Gastropoda: sum	24	7	30	42	932	42	62
prt	*Anomia patelliformis* L. (l)	—	—	} 25	13	—	{ 11	} 20
	» *striata* BROCCHI (l)	—	+			—	7	
	Pecten varius L. (l)	—	+	+	1/2	—	—	2
	» *septemradiatus* MÜLL. (b) . .	—	—	—	—	—	+	—
	» *tigrinus* MÜLL. (b).	—	—	—	—	—	1	—

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		Håfve p. 301		Hälle II p. 321		Tofterna A p. 308		Hälle III p. 35
	Locality: height in *m* above the sea	22·3		16·5		1·5		13
	Samples: »	20·6		14·6	15·1	1·5		13
	Coarseness of material in *mm*	1—2	2<	3<	3<	1—2	2<	3<
Primo-post-glacial regressional and post-glacial transgressional immigrants	*Portlandia sp.* (*tenuis* PHIL.?)	—	—	—	—	2	—	—
	Cardium cf. fasciatum MONT. (b)	2	3	4	2	200	4	7
	Timoclea ovata PENN. (b)	10	3	6	8	6	1	8
	Axinus flexuosus MONT. (b)	8	—	—	—	40	11	—
	» *Sarsi* PHIL. (b)	—	—	—	1	—	—	1
	Montacuta substriata MONT. (b)	—	—	—	—	4	—	—
	Thracia papyracea POLI (l)	—	—	1/2	—	—	—	—
	» *sp.*	—	—	—	1/2	—	—	—
	Corbula gibba OLIVI (l)	20	1	3	2	—	—	9
	Antalis entalis L. (b)	—	—	—	—	—	1	—
	Pelecypoda: sum	40	7	38 1/2	27	252	36	47
	Emarginula fissura L. (l)	—	—	—	—	—	1	5
	Capulus hungaricus L. (l)	—	—	—	1	—	—	1
	Lacuna pallidula DA COSTA (b)	—	—	—	4	—	—	—
	Alvania punctura MONT. (l)	—	—	—	—	40	—	—
	Rissoa violacea DESM. (l)	—	—	—	2	—	—	10
	» *parva* DA COSTA (b)	8	—	1	—	88	—	5
	» *inconspicua* ALD. (l)	—	—	—	—	12	—	—
	Turritella terebra L. (l)	—	—	—	—	—	—	1
	Bittium reticulatum DA COSTA (l)	260	32	205	365	—	—	390
	Triforis perversa L. (l)	4	—	1	—	8	—	[illegible]
	Gastropoda: sum	272	32	207	372	148	1	414
	Waldheimia cranium MÜLL. (a)	—	—	—	—	—	1/2	1
prt	*Echinus esculentus* L.	—	—	—	—	+	—	—
	Echinocyamus pusillus MÜLL.	—	—	4	3	60	17	—
ptm	*Spirialis retroversus* FLEMG. (l)	—	—	—	—	4	—	—
spr	*Venus fasciata* DON. (l)			—	—	4	1/2	—
	Mangelia costata DON. (l)			—	—	8	—	—
	Philine quadrata WOOD (a)			—	—	4	—	—

List of sub-fossil molluscs, etc., in Western Sweden, according to Gerard De Geer and the author.[1]

	(Gothi-glacial regression and) fini-glacial transgression	Fini-glacial regression	Primo-post-glacial regression and post-glacial transgression	Post-glacial transgression maximum	Sero-post-glacial regression	Recent times
	ft	fr	prt	ptm	spr	rec.
Abra cf. alba Wood (l)	—	+	+	+	+	+
» *cf. nitida* Müll. (b)	—	—	+	—	+	+
» *prismatica* Mont. (b)	—	—	—	—	+	+
Aclis supranitida Wood (l)	—	—	—	+	—	+
Actaeon tornatilis L. (l)	—	—	—	—	+	+
Alvania cimicoides Forb. (b)	—	—	—	—	+	+
» *punctura* Mont. (l)	—	—	+	+	+	+
» *reticulata* Mont. (l)	—	—	+	—	+	+
Anomia aculeata L. (b)	—	+	+	+	+	+
» *ephippium* L. (b)	—	+	+	+	+	+
» *patelliformis* L. (l)	—	—	+	+	+	+
» *striata* Brocchi (l)	—	—	+	+	+	+
Antalis entalis L. (b)	—	—	+	+	+	+
» *striolata* Stimps. (a)	+	—	—	—	—	+
Aporrhais pes pelecani L. (l)	—	+	+	+	+	+
Arca glacialis Gray (a)	+	—	—	—	—	—
Arcinella plicata Mont. (b)	—	—	—	—	+	+
Astarte borealis Chemn. (a)	+	—	—	—	—	+
» *compressa* Mont. (a)	+	+	+	+	+	+
» *elliptica* Brown (a)	+	+	+	+	+	+
Axinus flexuosus Mont. (b)	—	—	+	+	+	+
» *Sarsi* Phil. (b)	—	—	+	+	+	+
Balanus crenatus Brug. (b)	+	+	+	+	+	+
» *Hameri* Asc. (a)	+	+	—	—	—	—
» *porcatus* da Costa (a)	+	+	+	+	+	+

[1] Surveys of the present distribution of the species in question can be found in Sars (1878, p. 351) and Nordgaard (1913); see, too, the works of Aurivillius, Jeffreys, Liljeborg, Lovén, Lönnberg, Malm, Petersen, and Trybom in the bibliography.

	ft	fr	prt	ptm	spr	rec.
Bittium reticulatum DA COSTA (l) . . .	—	—	+	+	+	+
Boreochiton marmoreus FABR. (a) . . .	+	+	+	+	+	+
» *ruber* LOWE (a)	—	+	+	+	+	+
Buccinum grönlandicum CHEMN. (a) .	+	+	—	—	—	—
» *undatum* L. (b)	—	—	+	+	—	+
Callochiton laevis PENN. (l)	—	—	—	+	—	+
Capulus glacialis N. ODHNER	+	—	—	—	—	—
» *hungaricus* L. (l)	—	—	+	+	+	+
Cardium echinatum L. (l)	—	+	+	+	+	+
» *edule* L. (l)	—	+	+	+	+	+
» *cf. exiguum* GMEL. (l) . . .	—	+	+	+	+	+
» *cf. fasciatum* MONT. (b) . .	—	—	+	+	+	+
» *cf. minimum* PHIL. (b) . . .	—	+	—	—	+	+
» *cf. nodosum* TURT. (b) . . .	—	+	+	+	+	+
Cingula castanea MÖLL. (a)	+	—	—	—	—	—
» *soluta* PHIL. (l)	—	—	—	—	+	—
Clathurella Leufroyi MICH. (l)	—	—	—	—	+	+
» *linearis* MONT. (l)	—	+	+	+	+	+
Coecum glabrum MONT. (l)	—	—	—	+	+	+
Corbula gibba OLIVI (l)	—	—	+	+	+	+
Craspedochilus marginatus PENN. (b) .	—	+	+	+	+	+
Cyamium minutum FABR. (b)	—	—	+	—	+	+
Cyprina islandica L. (b)	—	+	+	+	+	+
Diaphana expansa JEFFR. (b)	—	—	—	+	—	?
» *hyalina* TURT. (b)	—	+	+	+	—	+
Dosinia lincta PULTEN (l)	—	—	—	—	+	+
Emarginula fissura L. (l)	—	—	+	+	+	+
Eulima bilineata ALD. (l)	—	—	—	—	+	+
» *distorta* DESH. (l)	—	—	—	+	+	+
Eulimella acicula PHIL. (l)	—	—	+	—	+	+
» *ventricosa* FORB. (l)	—	—	—	—	+	+
Gibbula cineraria L. (b)	—	+	+	+	+	+
» *tumida* MONT. (b)	—	+	—	—	+	+
Hinnites pusio L. (l)	—	—	—	+	—	+
Homalogyra atomus PHIL. (l)	—	—	—	—	+	+
Hydrobia ulvae PENN. (b)	—	+	+	+	+	+
Isocardia cor L. (l)	—	—	—	—	+	+
Jeffreysia opalina JEFFR. (l)	+	—	—	—	—	—

	ft	fr	prt	ptm	spr	rec.
Kellia suborbicularis MONT. (b)	—	—	+	+	+	+
Lacuna divaricata FABR. (a)	+	+	+	+	+	+
» *pallidula* DA COSTA (b)	—	—	+	+	+	+
Lasaea rubra MONT. (l)	—	—	+	+	+	—
Laevicardium norvegicum SPENGEL (l) .	—	+	+	+	+	+
Leda minuta MÜLL. (a)	+	—	—	—	+ ?	+
» *pernula* MÜLL. (a)	+	—	—	—	+ ?	+
Lepeta caeca MÜLL. (a)	+	+	—	+	+	+
Lepidopleurus cancellatus SOW. (b) . .	—	—	—	+	—	+
» *cinereus* L. (l)	—	+	+	+	+	+
Lepton nitidum TURT. (l)	—	+	+	+	+	+
Lima Loscombi SOW. (l)	—	—	—	—	+	+
Litorina litorea L. (b)	+	+	+	+	+	+
» *palliata* SAY (a)	+	—	—	—	—	+
» *obtusata* L. (b)	—	+	+	+	+	+
» *rudis* MATON (b)	+	+	+	+	+	+
Lophyrus albus L. (a)	—	—	+	—	+	+
Lucina borealis L. (b)	—	+	+	+	+	+
Lucinopsis undata PENN. (l)	—	—	+	—	+	+
Lunatia grönlandica BECK. (a)	+	—	—	—	—	+
» *intermedia* PHIL. (l)	—	+	+	+	+	+
» *Montagui* FORB. (l)	—	—	—	—	+	+
Macoma baltica L. (b)	—	+	—	+	+	+
» *calcaria* CHEMN. (a)	+	+	+	+	+	+
» *tenuis* DA COSTA (b)	—	—	—	—	+	+
Mactra elliptica BROWN (b)	—	—	+	+	+	+
» *subtruncata* DA COSTA (l) . . .	—	—	+	+	+	+
Mangelia costata DON. (l)	—	—	—	—	+	+
Margarita grönlandica CHEMN. (a) . .	+	—	—	—	—	—
» *helicina* FABR. (a)	+	—	—	+	+	+
Modiolaria discors L. (b)	—	—	+	+	+	+
» *laevigata* GRAY *var. striata* (a) .	+	+	+	+	—	—
Montacuta bidentata MONT. (l)	—	+	+	+	+	+
» *Maltzani* VERKR. (a) . . .	—	—	—	+	—	—
» *substriata* MONT. (b) . . .	—	—	+	—	+	+
» *Vöringi* FRIELE (b)	—	—	—	—	+	—
Mya arenaria L. (b)	—	—	—	—	+	+
» *truncata* L. (a)	+	+	+	+	+	+

	ft	fr	prt	ptm	spr	rec.
Mytilus edulis L. (b)	+	+	+	+	+	+
» *modiolus* L. (b)	—	+	+	+	+	+
Mölleria costulata MÖLL. (a)	+	—	—	—	+	—
Nacella pellucida L. (b)	—	—	+	+	+	+
Nassa incrassata STRÖM (b)	—	+	+	+	+	+
» *reticulata* L. (l)	—	+	+	+	+	+
Natica affinis GMEL. (a)	+	+	—	—	—	?
Neptunea despecta L. (a)	+	—	—	—	+	+
Nucula nucleus L. (l)	—	+	+	+	+	+
» *tumidula* MALM (b)	—	—	+	—	—	+
Odostomia cf. albella LOV. (l)	—	—	+	+	+	+
» *cf. rissoides* HANL. (l)	—	—	+	—	+	+
» *unidentata* MONT. (b)	—	—	—	+	+	+
Onoba aculeus GOULD. (b)	—	+	+	+	+	+
» *striata* MONT. (b)	—	+	+	+	+	+
Ostrea edulis L. (l)	—	+	+	+	+	+
Parthenia interstincta MONT. (l)	—	—	—	—	+	+
» *spiralis* MONT. (b)	—	+	+	+	+	+
Patella vulgata L. (b)	—	+	+	+	+	+
Pecten islandicus MÜLL. (a)	+	+	+	+	+	+
» *septemradiatus* MÜLL. (b)	—	—	+	+	+	+
» *tigrinus* MÜLL. (b)	—	—	+	+	+	+
» *varius* L. (l)	—	—	+	+	+	+
Philine quadrata WOOD (a)	—	—	—	—	+	+
Pleurobranchus plumula MONT. (l)	—	—	+	—	—	—
Polytropa lapillus L. (b)	—	+	+	+	+	+
Portlandia arctica GRAY (a)	+	—	—	—	—	—
» *frigida* TORELL (b)	—	—	—	—	+	—
» *lenticula* FABR. (a)	+	—	—	—	+ ?	+
» *cf. tenuis* PHIL. (b)	—	—	+ ?	+	—	+
Psammobia ferröensis CHEMN. (b)	—	—	—	—	+	+
» *vespertina* CHEMN. (l)	—	—	+	—	+	—
Ptisanula limnoides N. ODHNER	+	—	—	—	—	—
Puncturella noachina L. (a)	+	+	—	+	+	+
Rissoa inconspicua ALD. (l)	—	—	+	+	+	+
» *interrupta* AD. (b)	—	+	+	+	+	+
» *parva* DA COSTA (l)	—	—	+	+	+	+
» *violacea* DESM. (l)	—	—	+	+	+	+

	ft	fr	prt	ptm	spr	rec.
Rissostomia membranacea Ad. (l) . . .	—	+	+	+	+	+
Saxicava rugosa L. (a)	+	+	+	+	+	+
Scalaria communis Lamk. (l)	—	—	—	—	+	+
Scrobicularia piperata Bell. (l) . . .	—	+	—	+	—	+
Siphonentalis lofotensis M. Sars (b) .	—	—	+	—	—	—
Skenea planorbis Fabr. (b)	—	+	+	+	+	+
Solecurtus antiquatus Pult. (l)	—	—	—	+	+	—
Solen ensis L. (b)	—	+	—	+	+	+
Spirialis retroversus Flemg. (l)	—	—	—	+	+	+
Tapes aureus Gmel. (l)	—	+	+	+	+	+
» *decussatus* L. (l)	—	—	+	+	+	—
» *pullastra* Mont. (b)	—	+	+	+	+	+
» *virgineus* L. (l)	—	+	+	+	+	+
Tectura virginea Müll. (b)	—	+	+	+	+	+
Tellimya ferruginosa Mont. (b) . . .	—	—	+	+	+	+
Tellina pusilla Phil. (b)	—	—	+	—	+	+
Terebratulina caput serpentis L. (b) .	—	—	—	+	+	+
» *septentrionalis* Couth. (a) .	—	—	—	—	+	—
Thracia papyracea Poli (l)	—	—	+	+	+	+
» *villosiuscula* Macg. (b). . . .	—	+	+	+	+	+
Timoclea ovata Penn. (b).	—	—	+	+	+	+
Triforis perversa L. (l)	—	—	+	+	+	+
Trophon clathratus L. (a)	+	+	—	—	—	+
Turbonilla indistincta Mont. (l) . . .	—	—	—	+	+	+
» *lactea* L. (l)	—	—	+	—	+	+
Turritella terebra L. (l)	—	—	+	—	+	+
Utriculus mammillatus Phil. (l) . . .	—	—	—	+	—	+
» *obtusus* Turt. (b)	—	—	+	+	—	—
» *truncatulus* Brug. (l) . . .	—	—	+	+	+	+
» *umbilicatus* Mont. (l) . . .	—	+	+	—	+	+
Waldheimia cranium Müll. (a)	—	—	+	+	+	+
Velutina laevigata Penn. (b)	+	—	—	—	—	+
Venus fasciata Don. (l)	—	—	—	—	+	+
» *gallina* L. (b)	—	—	+	+	+	+
Verruca Strömia Müll. (b).	+	+	+	+	+	+
Vola maxima L. (l)	—	—	+	—	+	+
Zirphaea crispata L. (b)	+	—	—	—	—	—

The position of the shell-beds examined.

The maps figs. 7 and 8 of the coast-belt of Northern and Central Bohuslän. — See, too, the geological map-sections »Strömstad», »Fjällbacka», and »Uddevalla».

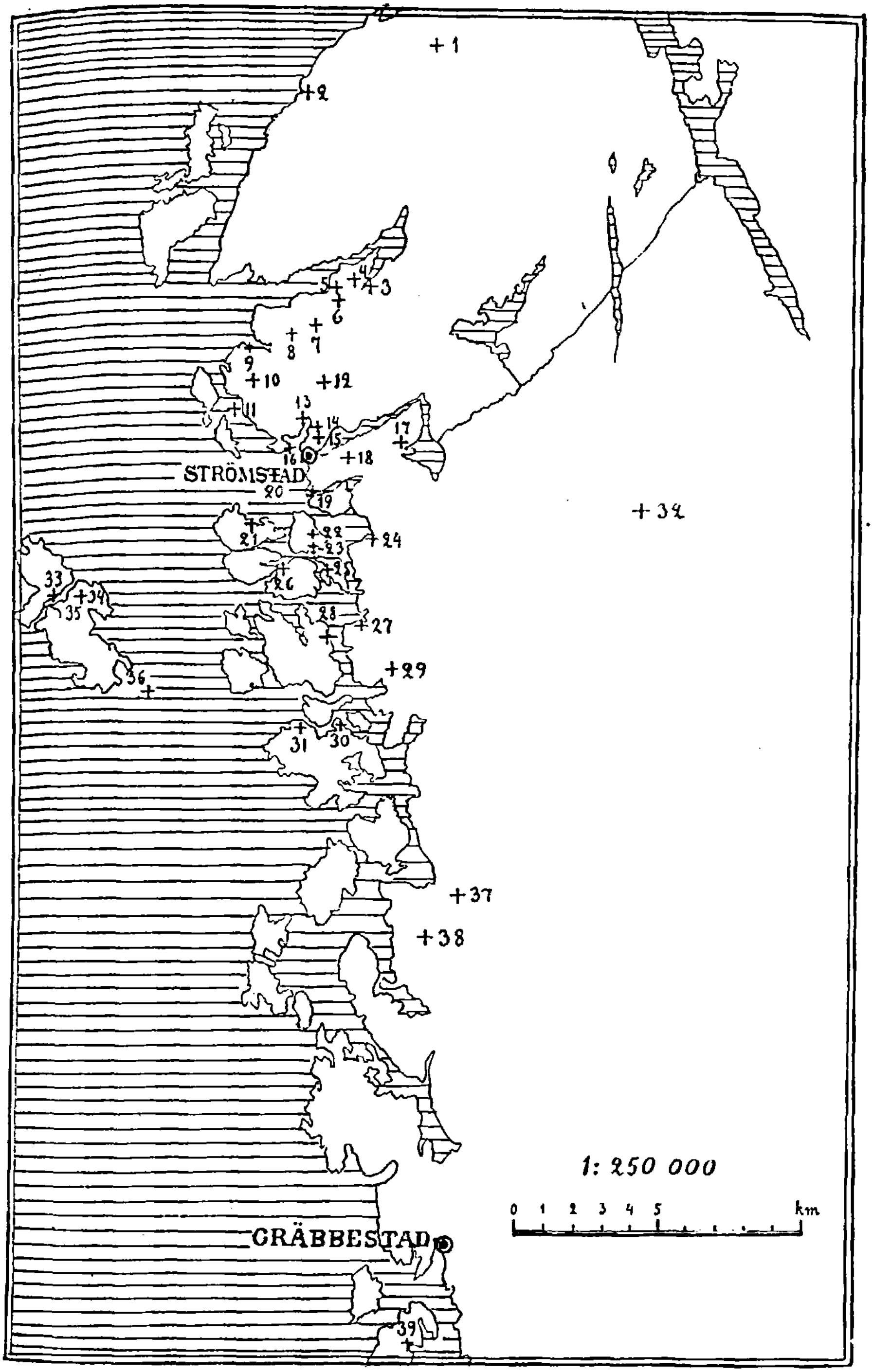
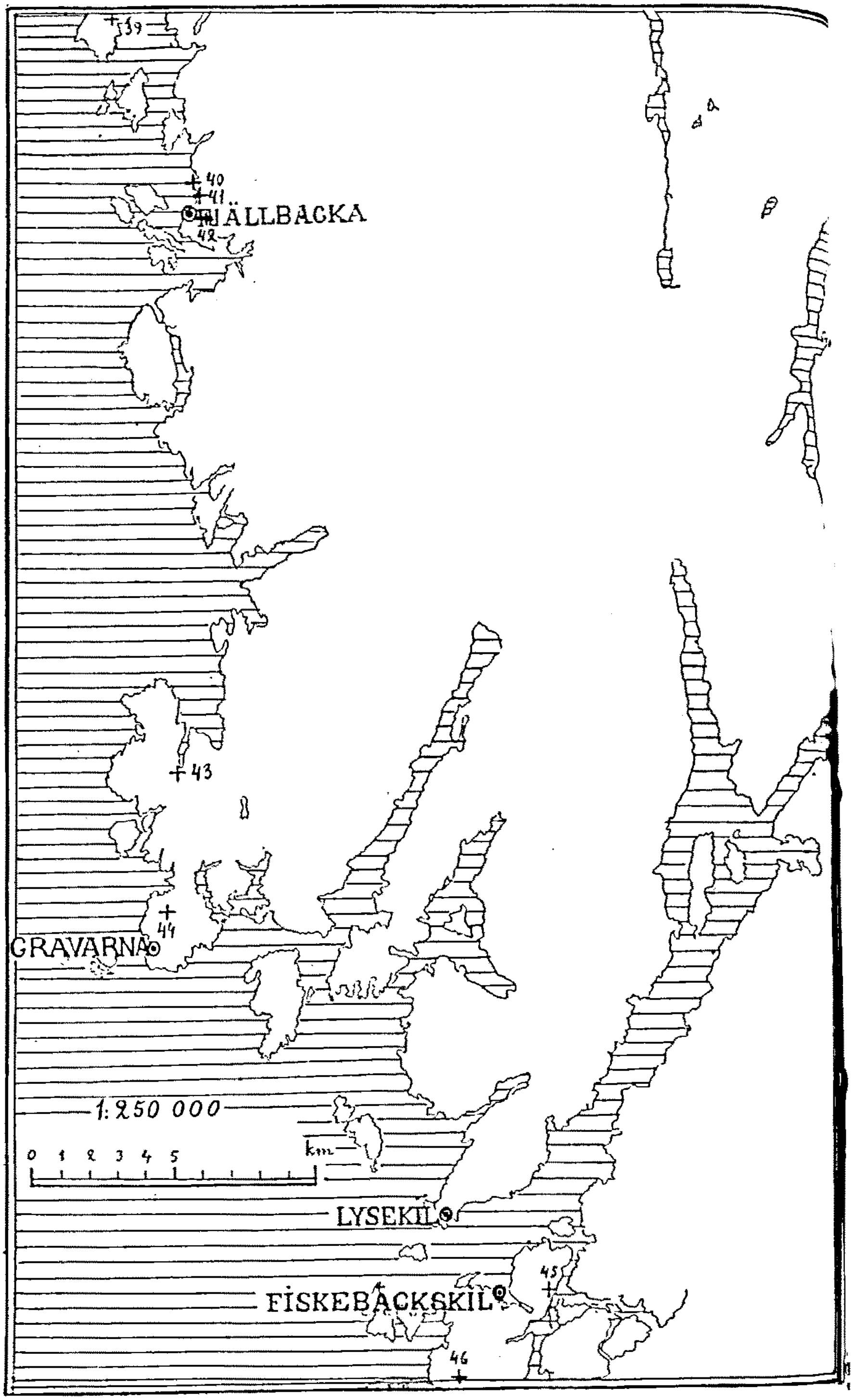


Fig. 7. The coast-belt of Northern Bohuslän.


39
40
41
FJÄLLBACKA
42
43
GRAVARNA
44
1:250 000
0 1 2 3 4 5
km
LYSEKIL
45
FISKEBÄCKSKIL
46

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