

# The Ecological Features of Certain Sheltered Intertidal Areas in Tasmania

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WITH 3 PLATES

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## SUMMARY

The salient features of sheltered shores are described. Most of the areas visited lie on the shores of D'Entrecasteaux Channel but some of the places are in sheltered localities in other parts of southern Tasmania. The most striking feature of sheltered coasts is the very great poverty of the fauna and flora. This feature has been noted in connection with all the coasts of Tasmania but the sheltered shores are in some places literally devoid of macroscopic forms at levels higher than the *Galeolaria* beds. The most common algae are the *Cystophoras* but in many inlets the Infralittoral Fringe is occupied by *Zostera*. This is especially true of bays where a change in the nature of substratum occurs at the level of 'low low' tide. One interesting area in the southern part of D'Entrecasteaux Channel shows the typical zonation of a wave exposed coast. This very restricted area is exposed to the southerly swell.

## INTRODUCTION

This paper is the fourth of a series describing the features of the intertidal ecology of Tasmania. The first three papers appeared in this journal and are listed in the references (Guiler, 1950 and 1951a-b).

Most of the areas examined lie on the shores of D'Entrecasteaux Channel which separates Bruny Island from the Mainland of Tasmania. The Channel is about 50 miles in length and most of this distance is sheltered from heavy seas. The southern end of the Channel is exposed to gales and heavy seas from the south.

The localities visited are mostly in the northern part of the Channel. The shore was examined at Kettering, Barnes Bay on Bruny Island, Kettering, Oyster Cove, Dover, Port Esperance, Snug and Tinderbox. A very brief examination was made at Catamaran.

The major survey was carried out in Barnes Bay but Oyster Cove and Kettering were also studied in some detail. Notes describing the salient ecological features of areas not in the Channel are included. These places are Dodge's Ferry and the Grange.

### (a) The Barnes Bay Area

Barne's Bay lies on the western shore of Bruny Island. It is a large bay which is divided into several smaller areas of water. At the eastern end of the bay are two inlets which run parallel to the main direction of the Channel. These inlets are known as Simmonds Bay. All the Barnes Bay area is sheltered from wave action and the Simmonds Bay area must be among the most sheltered waters in Tasmania.

Several transects were examined but details are given of only one of these as there is a very great similarity throughout most of the shore of the bay.

#### TRANSECT 1

Station	On rocks at the southern side of the entrance to Simmonds Bay.
Dates	20th February, 1951 and several previous dates.
Type	Sheltered rocky coast.
Maximum wave exposure	s. (0-6). 1. b, 2.
Description	The transect lies on the gently sloping rocks on the shore a short distance from a small point at the entrance to Simmonds Bay. The rocks on this side of the entrance are gently sloping (southern side). A large dead tree lying at the edge of the water is 50 yards to the west of the transect.
Geology	Mudstone.
Tidal data	From the Hobart Recorder.
Physical Environment	As described for Blackman's Bay.
Zonation	The basic zonation is . . . . . <i>Melaraphe unifasciata</i> Barnacle belt <i>Siphonaria diemenensis</i> + <i>Austrocochlea obtusa</i> , <i>Galeolaria caespitosa</i> , <i>Hormosira banksii</i> + <i>Mytilus planulatus</i> , <i>Cystophora</i> sps.

#### *The Supralittoral Zone*

This zone is devoid of any macroscopic life, being composed of bare rock.

#### *The Supralittoral Fringe*

The only organisms found in this zone are the gastropod *Melaraphe unifasciata* and the crab *Cyclograpsus punctatus* (M-Ed.). The gastropod is relatively few in numbers and forms a belt only 4 inches in vertical height. This can be attributed to the lack of splash from the very slight wave action. The wave action in turn is controlled by the very narrow stretch of water over which the wind can blow waves on to the transect. A few hundred yards towards the Channel where the bay is wider the *Melaraphe* population becomes quite dense with up to 20 individuals per square foot. At this place the bay widens in a northerly direction and the prevalent wind blowing from that direction causes greater wave action and spray. It might be noted that the maximum wave action is not likely to be experienced very often at the transect as it could only be encountered when the wind was in a restricted north-westerly quarter. The most usual wave action is somewhere in the region of s. (1-5). 0. b,2. In places where there is little spray *Melaraphe* does not live on small stones but where there is some spray the species frequents almost any non-cryptic habitat.

The crab *Cyclograpsus punctatus* is not found in places where there are no loose boulders. The crab hides under rocks and especially under places where there are stones piled on top of each other. It is very quick in its movements and difficult to catch in its favourite environment.

#### *The Midlittoral Zone*

The top belt in this zone is that inhabited by the barnacle *Elminius modestus* Darwin and *Chamaesipho columna* (Spengler). Of these two

species, *Elminius* is found slightly higher on the shore than *Chamaesipho*, but this difference may only be local in occurrence.

The barnacles do not form a continuous belt on the shore but are found in clusters on the rocks. Living in the barnacle belt are numerous individuals of the mollusc *Bembicium nanum*. On the transect this latter species does not form a band, but in places where there is a nearly horizontal substratum with small stones the gastropod is very plentiful, the zonation being as shown below.

*Melaraphe unifasciata*

*Bembicium nanum*

Barnacles.

It was noted at Blackman's Bay that *Bembicium nanum* does not tolerate wave action and from observations made on the shore in this area it appears that it does not live on steep slopes.

The barnacle belt is only two feet in vertical height. The lack of wave action and spray in this area is reflected in the narrow vertical height of the zones.

The barnacle belt is replaced by a mixed strip of *Siphonaria diemenensis* and *Austrocochlea obtusa* (Dillwyn). As the wave action increases the belt becomes dominated by *Austrocochlea obtusa*. Also found in this belt are a few *Cellana limbata*, *Patelloida alticostata* and *Patelloida cantharus*.

*Austrocochlea obtusa* does not inhabit vertical or steep rock faces, but it is very numerous on horizontal or nearly horizontal rocks to the west of the transect. The occurrence on these horizontal faces is not correlated with wave action. It is also extremely numerous on a stony horizontal shelf in the southern inlet of the bay.

The *Galeolaria* belt follows below the mixed *Siphonaria-Austrocochlea* belt, but the worm tubes do not form thick crusts on the rocks. However, they do form a very prominent band round most of the shore. *Galeolaria* occurs most plentifully in places where there is drainage of water off the rocks, e.g., in clefts in the rock along which water runs or between two rocks where waves pass.

*Hormosira banksii* is not common on the shore. In some places it dominates the mussels but in most parts of the shore the alga is present as a sub-dominant. At places where the wave action reaches a maximum the *Mytilus-Hormosira* zones are raised up on the shore and *Brachyodontes rostratus* (Dunker) occurs as a thin belt above them. Several *Modiolus pulex* Lam. are to be noted at this same place. The zoning here is as listed below.

*Melaraphe unifasciata*

*Bembicium nanum*

Barnacles

*Austrocochlea obtusa*

*Galeolaria caespitosa*

*Brachyodontes rostratus*

*Mytilus planulatus*

*Cystophora* sps.

#### *The Infralittoral Fringe*

The Infralittoral Fringe is dominated by *Cystophora cephalornithos* (Lab.) J. Ag. and *Cystophora torulosa* (R.Br.) J. Ag. Other species

found in the Infralittoral fringe are *Ecklonia radiata* (Ag.) J. Ag., *Sargassum verruculosum* (Mert.) Ag. and *S. paradoxum* (R.Br.) Harv. These species form a forest on which many smaller species of algae are found.

About six feet below low water level the Infralittoral is populated by a dense growth of *Zostera nana*. The belt is not found over the whole of the bottom of the bay but is confined to the edges of the Infralittoral.

#### *Comparison with Other Parts of the Bay*

An interesting condition is to be seen on the western shore of the southern inlet at the head of Barnes Bay. This inlet is extremely sheltered and the wave action encountered is negligible. The shore is composed of muddy sand, at the upper end of which is a low bank of soil which supports a number of large trees. The shore has several dead trees as well as broken branches lying on it. The zonation here is most interesting as the mussel, *Mytilus planulatus* extends nearly up to the bank; living attached to the trees, &c. The mussels near the top of the shore experience nearly eighty to ninety per cent exposure but this does not appear to inconvenience them. They are smaller in size than those found in the lower Midlittoral. Above the *Mytilus planulatus* the smaller *Brachyodontes rostratus* forms a thin and not well defined band extending as far as the soil bank. Thus, in this region, we have the unique feature of most of the solid objects in the intertidal belt covered by mussels. The gastropod *Austrocochlea obtusa* is present in some numbers over most of the shore. The Infralittoral Fringe has clusters of *Mytilus planulatus*, *Pyura praeputialis* and *Ostraea*. These clusters extend for some distance across the lagoon bottom but in many places they are replaced by patches of *Cymodocea antarctica* or *Zostera nana*.

On the same shore as that described above at a small rocky point near a prominent sandy spit the zoning is as shown below.

Bare rock  
*Bembicium*  
*Austrocochlea*  
*Galeolaria* + *Sypharochiton*  
*Mytilus* + *Galeolaria*  
 Muddy bottom with *Alpheus*.

The shore slopes gently from the bottom of low cliffs of mudstone, the slope being 2½ feet in 22 feet.

The *Bembicium* belt is about 5 feet in width of which the last foot is mixed with *Elminius modestus*. The barnacles are not sufficiently numerous to form a belt.

The *Austrocochlea* belt is also 5 feet in width, of which the last 3 feet are mixed with *Siphonaria diemenensis*. There is no Patelloid belt as the *Austrocochlea* is replaced by *Galeolaria* + *Sypharochiton*.

*Galeolaria* occurs on stones and rocks and the chiton, *Sypharochiton pellis-serpentis* is very numerous in cracks between the rocks. Also found in this belt are *Austrocochlea obtusa*, *Siphonaria diemenensis* and *Patelloida alticostata*.

The lowest belt on the shore is occupied by mussels and *Galeolaria*. The serpulid is only common in the upper parts of the zone. The belt

is terminated by a muddy bottom on which there is no suitable substratum for the mussels to settle.

It is most noticeable that there is a very small number of species found on the shore. The algae are absent, even from the Infralittoral Fringe.

At a place where the cliffs shelter most of the shore the zoning is as below.

Bare rock  
 A narrow belt of *Elminius modestus*  
 Mussels and *Galeolaria*  
 Mussels and *Pyura*.

On the sun-exposed side of the inlet the mussels occur on only the sheltered sides of logs at or about mean sea level.

In this region it can be seen that the degree of sun exposure is an important factor controlling the distribution of the mussel *Mytilus planulatus*. The species is found farther up the shore on the sun-sheltered side of the southern inlet at the head of Barnes Bay.

#### (b) Kettering

The area examined at Kettering was chosen with a view to examining further the distribution of the mussels in relation to sun exposure. The part of the shore examined is at the point at the northern end of the bay. The shore in this area is sheltered from the sun by cliffs and trees.

#### TRANSECT 2

Station	On the point at the northern end of Little Oyster Cove, Kettering.
Date	12th April, 1950.
Type	Sheltered rocky coast.
Maximum wave action	s. (1-5). 2. b, 2.
Description	The transect runs vertical to the shore line just to the north of the point. Plate 49 is slightly oblique to the line of transect. There is a 2 feet high ledge at the top of the shore and below this the shore forms a platform which has a few loose rocks lying on it. The lower shore is composed of loose stones and rocks scattered on the mudstone platform. The distance from the top of the platform to the <i>Cystophora</i> is 37 feet with a drop of 3 feet.
Geology	Mudstone.
Tidal data	From the Hobart Recorder.
Physical Environment	As described for Blackman's Bay.
Zonation	<i>Mesembryanthemum aequilaterale</i> , <i>Brachyodontes rostratus</i> , <i>Austrocochlea</i> + <i>Mytilus</i> , <i>Galeolaria</i> + <i>Mytilus</i> , a mixed belt, and <i>Cystophora</i> sps.

#### *The Supralittoral Zone*

The Supralittoral is largely occupied by *Mesembryanthemum*. This succulent grows in the rock clefts below the *Casuarina* but it is very local in distribution. It is possible that the species is Terrestrial and not Supralittoral.

#### *The Supralittoral Fringe*

The gastropod *Melaraphe unifasciata* is very rare or absent over most of this part of the shore. On the line of section the species is absent. In other places it is present in cracks but even in this habitat it is scarce. On this part of the coast it is certainly true to say that the *Melaraphe* belt does not exist.

### The Midlittoral Zone

At the foot of the ledge the small mussel, *Brachyodontes rostratus* is plentiful in cracks. The surface of the platform is bare. The *Brachyodontes* belt is narrow but forms a well defined band round all of the shore. A few *Elminius modestus* and *Chamaesipho columna* are to be found in sun sheltered places but they do not form a characteristic strip.

The *Brachyodontes* belt is replaced by one of gastropods and mussels. The species are *Austrocochlea* and *Mytilus planulatus*. The gastropod roams over the surface of the platform but the mussel is confined to cracks. In the lower part of the belt the mussels are also found on the surface of the rocks. In the upper part, *Patelloida conoidea* is the only other large organism found in the cracks.

*Sypharochiton pellis-serpentis*, *Patelloida conoidea* and *P. alticostata* live in cracks just above the *Galeolaria* band in the lower part of the exposed platform.

The mussels form small clusters in places and *Cominella lineolata*, *Lasaea australis*, *Paragrapsus gaimardii* and *Petrolisthes* sp. live among the byssus strands.

*Galeolaria* appears at about a distance of 16 feet from the top of the platform but does not form a belt until about 19 feet from the edge. The serpulid forms a discontinuous, but very prominent, band along the shore especially on the loose stones at the lower end of the platform. The presence of this species on loose stones is a significant indication of the lack of strong wave action (Plate 1).

Also found in the *Galeolaria* belt are *Mytilus planulatus*, *Siphonaria diemenensis*, *Sypharochiton pellis-serpentis* and *Patelloida alticostata*.

At a distance of 24 feet from the top of the section is a large boulder (at the left-hand side of Plate 1). The boulder is largely populated by serpulids and *Mytilus* with the lichen *Lichina confinis* and some *Elminius* and *Chthamalus*. On the sun sheltered side *Ulva lactuca* is found. The sponge *Hymeniacidon perlevis* (Montagu) forms a green encrustation on the lower parts of the rock.

Between this rock and the Infralittoral Fringe the shore is populated by *Galeolaria*, *Mytilus*, *Elminius modestus* and *Chthamalus antennatus*. This belt is very mixed and no single species can be described as dominant.

The Infralittoral Fringe is dominated by *Cystophora uvifera* and *Cystophora torulosa*, with *Sargassum paradoxum*, *Codium fragile*, *Hormosira banksii*, and *Enteromorpha*. As at Barnes Bay the algae of the Infralittoral Fringe extend into the Infralittoral for a short distance when they are replaced by a sandy bottom with *Zostera* patches.

The species mentioned above are the only macroscopic animals found on the upper surface of the rocks. The species always appear in cracks at the upper limit of their range but lower down the shore they colonize the unsheltered rocks.

#### (c) Oyster Cove

The physical environment at Oyster Cove is virtually the same as at Kettering with the exception that the wave action is less, due to the region being more sheltered from northerly winds.

The zonation here is

Bare rock  
*Lichina*  
*Siphonaria diemenensis*  
*Galeolaria*  
*Hormosira*  
*Cystophora* sps.

The most noticeable feature is the complete absence of *Melaraphe unifasciata*, the upper shore being devoid of any large forms.

*Lichina confinis* forms the first belt found on the shore. This species appears to have a very wide wave-action toleration. In the cracks in the rocks in the lichen belt a few *Siphonaria diemenensis* and *Chthamalus antennatus* are to be found but they do not form a band.

The faunal poverty on this shore is remarkable. The next belt is a very poorly populated strip of *Siphonaria diemenensis* which has a few *Galeolaria* tubes and scattered *Modiolus pulex* Lam. Below this is a belt of *Galeolaria* in which the tubes are scattered very thinly on the rocks. (Plate 2).

There is a marked difference in the shore immediately below the *Galeolaria* belt. The worm tubes form a mixed strip with *Hormosira*, the latter becoming dominant lower down the shore. Living among the *Hormosira* are a few *Mytilus planulatus*. Throughout this and the higher parts of the shore *Austrocochlea* is found in clefts.

The Infralittoral Fringe is dominated by *Cystophora torulosa* and *C. uvifera*. These species do not extend over the Bay bottom which is of sandy mud and supports an Infralittoral growth of *Zostera*. The sandy mud commences at about the level of extreme low water so that the *Cystophora* forms a true Infralittoral Fringe.

The zoning on a pile at the jetty is of interest being as set out below.

1' 4" Barnacles  
 10" *Galeolaria*  
 1' 0" *Pyura*

Bare for a distance of 5 feet to the bottom of the bay.

Another nearby pile showed a zonation of

1' 4" Barnacles  
 5" *Galeolaria*  
 1' 3" *Mytilus* + *Pyura*  
 1' 0" *Ostrea* + *Mytilus*.

Sponges to the bottom of the bay.

On these two piles the barnacle belt is composed of the same two species and has the same vertical height. The *Galeolaria* belt, however, has a vertical height of 10" on one pile and only 5" on the other. The environment on the piles under the jetty should be the same. The reason for the marked difference in vertical height existing between the two *Galeolaria* belts is probably due to interspecific competition between *Galeolaria*, *Mytilus* and *Pyura*. Only long term observations can decide as to whether the 10" belt has reached maximum height by the serpulid slowly crowding out other species, or whether the 5" belt has reached its maximum height as a result of *Pyura* crowding out the serpulid.

The type of shore seen here is fairly typical of that found in nearly all of the very sheltered rocky coasts in Southern Tasmania. The poverty of the fauna in the levels above that occupied by *Hormosira* is one of the most salient features of all the Tasmanian intertidal region. In some places where there is a little spray, *Melaraphe* may be found sparsely distributed on the upper parts of the shore.

(d) On a reef at the Grange, Derwent Estuary

This reef extends out about 60 feet from the shore. The reef is horizontal with the surface at about M.S.L. The seaward end of the shelf is slightly higher than the remainder of the platform. This area will only be described very briefly. It is included because it shows an intermediate condition between the *Cystophora torulosa* and *Lessonia* types of shore.

The *Melaraphe* belt is very poorly developed. Only a few scattered specimens are to be found among the boulders at the top of the shore. Most of the reef surface is dominated by *Galeolaria* with or without *Mytilus planulatus*. There is no *Hormosira* except in pools where there is considerable splash. The reef is too low for the full development of a Barnacle belt but the species are found on the boulders further up the shore. The wave action may be sufficient to cause the boulders to move and so prevent the establishment of any stable life. The upper *Galeolaria* belt has a few *Elminius simplex* and *E. modestus* with some *Siphonaria diemenensis* and *S. zonata*.

On a prominent rock on the reef the barnacle belt is well developed with *Lichina confinis* but there is no *Galeolaria* on the rock.

The mussel beds are extensive and cover most of the seaward end of the reef. Small clusters of mussels are found for some distance up the reef. The mussel beds are not as well developed as at Blackman's Bay and there is not as rich a Cryptofauna below them.

*Ulva lactuca* forms a partial covering to the beds with *Spirorbis* sp. (? *borealis* (L)) and *Elminius simplex*. Below the mussels are *Cominella lineolata*, *Patiriella exigua* and *Petrolisthes elongatus*. There are no *Pyura praeputialis*.

The Infralittoral Fringe is dominated by *Cystophora spartioides* with a few *Lessonia* plants. *Hormosira banksii* is also common together with *Cystophora uvifera*, *C. torulosa* and *Sargassum paradoxum*.

There are no limpets or Coralline belt. The zonation thus is as given below.

*Melaraphe*  
*Galeolaria*  
*Mytilus*  
*Cystophora spartioides*

but if the prominent rock is taken into consideration the zoning is altered as below.

*Melaraphe*  
 Barnacles  
 Lichen  
*Galeolaria*  
*Mytilus*  
*Cystophora spartioides*



The surface of the reef has numerous scattered shallow pools. These ponds reflect the conditions of the Infralittoral Fringe or of lower parts of the shore. A pool near the landward end of the reef shows basically the same population as the surface of the reef in or near the mussel beds (Plate II) while a pool in the mussel beds has *Cystophora* and other Infralittoral algae. At some time in the future it is hoped to make a study of Tasmanian pool conditions.

(e) At Dodge's Ferry

Dodge's Ferry lies at the entrance to Pittwater, an inlet of Frederick Henry Bay. The water is extremely sheltered, comparable with Kettering or Oyster Cove.

The upper shore is similar to that described at Kettering with the exception that there is a well developed *Melaraphe* and *Bembicium* belt. The shore slopes at a very shallow angle and so allows the slight wave action to cover the maximum amount of shore. The barnacle belt is not very well developed but the *Galeolaria* belt in December 1949 was very thick and broad, the tubes forming encrustations up to 6" thick on the rocks (Plate II). Living in among these tubes were numerous *Ibla quadrivalvis*. These stalked barnacles are normally small with a short peduncle but in order to survive in the worm tube masses they had developed very long stalks. The *Galeolaria* tubes also sheltered Polynoid worms, *Lasaea australis* and several errant polychaetes.

The mussel beds below the *Galeolaria* are also well developed, being on a scale similar to that seen at Blackman's Bay. The mussels are replaced by the ascidian *Pyura praeputialis* (Plate III). These ascidians form a discontinuous bed along most of the shore. In many cases the ascidians develop "roots" which hold them in position on the rocks (Plate III). The rocks are replaced at low water level by the sandy bottom of the bay. The ascidians cover the rock as far down as the sand.

(f) At Dover

(1) ON THE EASTERN SIDE OF THE JETTY

The Infralittoral Fringe is composed of *Cystophora spartioides*, *C. torulosa* and *C. uvifera*. In some places the algae are replaced by *Zostera*, but at some other areas there is a dense growth of *Enteromorpha*. The zoning above the Infralittoral Fringe is as indicated below.

*Bembicium melanostoma*  
*Siphonaria diemenensis*  
*Galeolaria*  
*Hormosira* + *Enteromorpha*

The salient feature here is the absence of both the barnacle and mussel belts. *Mytilus planulatus* is found on the shore but it is confined to cracks and does not form a bed. A few *Melaraphe unifasciata* are found on the rocks in the upper part of the *Bembicium* belt but the species does not form a characteristic strip. This may be partly explained by the slope of the shore which suddenly alters into a 4 feet high ledge at the place on the shore where one would expect to find *Melaraphe*. The presence of this ledge would effectively cut off the little spray or wave action that might be obtained on the upper levels of the shore.

*Austrocochlea obtusa* var. *constricta* is very numerous on the shore. It is found in the *Siphonaria*, *Galeolaria* and *Hormosira* belts. In the *Hormosira* and Infralittoral Fringe are numerous individuals of the gastropod species *Cominella lineolata*. This species is usually found below the mussel beds at a much lower tidal level than on these rocks. A putrefying sheep which was lying on the shore in the *Siphonaria* belt probably attracted the gastropods since these animals have a strong sense of smell.

The shore is very poor in species, the only large organisms found are *Sypharochiton pellis-serpentis*, *Patelloida conoidea* and *Siphonaria zonata*. There are also a few *Ulva* plants.

(2) ON THE WESTERN SIDE OF THE JETTY

The zoning is very different from that seen on the other side of the jetty. It is not possible to advance any satisfactory reason for this faunal change, though the shore profile may have some influence in the matter.

There is a horizontal rock platform which permits the slight wave action that exists to reach for some distance up the shore. The zonation is as shown below.

Barnacles  
*Bembicium melanostoma*  
*Austrocochlea obtusa*  
*Galeolaria*  
*Hormosira*

The belts below the *Hormosira* are the same as those seen on the eastern side of the jetty.

The barnacles are of the two species, *Elminius simplex* and *Chamaesiphon columna*. The belt is locally sub-divided by isolated patches of *Lichina confinis* and *Rivularia*. In several places the barnacles are not dominant and are replaced by *Bembicium melanostoma*. In the lower parts of the barnacle belt *Patelloida conoidea* and *Austrocochlea obtusa* are found. There are no other species found on this part of the shore.

*Austrocochlea* is very numerous below the barnacle belt. Other species found in the same region of the shore are *Bembicium melanostoma*, *Chamaesiphon columna*, *Galeolaria* and a few *Brachyodontes* in cracks. The worm tubes do not occur in a continuous, thick incrustation on the rocks but they form a very prominent band. In clefts in this band are a few small *Mytilus planulatus*. The mussels do not form a belt.

The algae of the Infralittoral Fringe are the same as those seen on the other side of the jetty.

On the shores of Port Esperance (the bay on which Dover is situated near Point Kent the zonation gradually changes to that which is characteristic of more exposed places, with *Xiphophora* dominant in the Infralittoral Fringe. The zones are all raised on the shore but the indicator species do not change with the exception of the Infralittoral algae as noted above.

(g) At the northern end of Roaring Beach

Roaring Beach is on D'Entrecasteaux Channel about eight miles north of Dover. The beach faces south and is not protected from the oceanic swell which pounds on the shore.

The rocks at the top of the north eastern end of the beach show the typical zonation seen on exposed shores. *Sarcophycus* is the dominant alga of the Infralittoral Fringe with a prominent *Corallina* belt above it. The latter consists of *Jania* sps., *Corallina* and the coral-like *Lithophyllum* sp. The latter is not as well developed as at Point Puer but is very much larger than at Betsy Island.

The Corallines are sharply replaced by *Catophragmus polymerus*. There is no *Patelloid* belt although *Siphonaria diemenensis*, *Patelloida alticostata* and *Cellana limbata* are all present in the *Catophragmus* belt. The barnacles are not well developed being about the same density of numbers as at Sleepy Bay. There is no barnacle belt such as seen on Betsy Island. *Melaraphe unifasciata* is dominant on the upper parts of the rocks.

The sheltered coasts show an even greater poverty of life than other types of shore in Tasmania. This can be attributed to the great increase in actual exposure on the upper parts of the shore where the wave action and spray are reduced to a minimum.

A full comparison of the different types of shore seen in Tasmania will be given in a later paper.

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FIG. 1.—The shore at Little Oyster Cove, showing *Mytilus planulatus* and *Galeolaria* with *Austrocochlea* in the background.

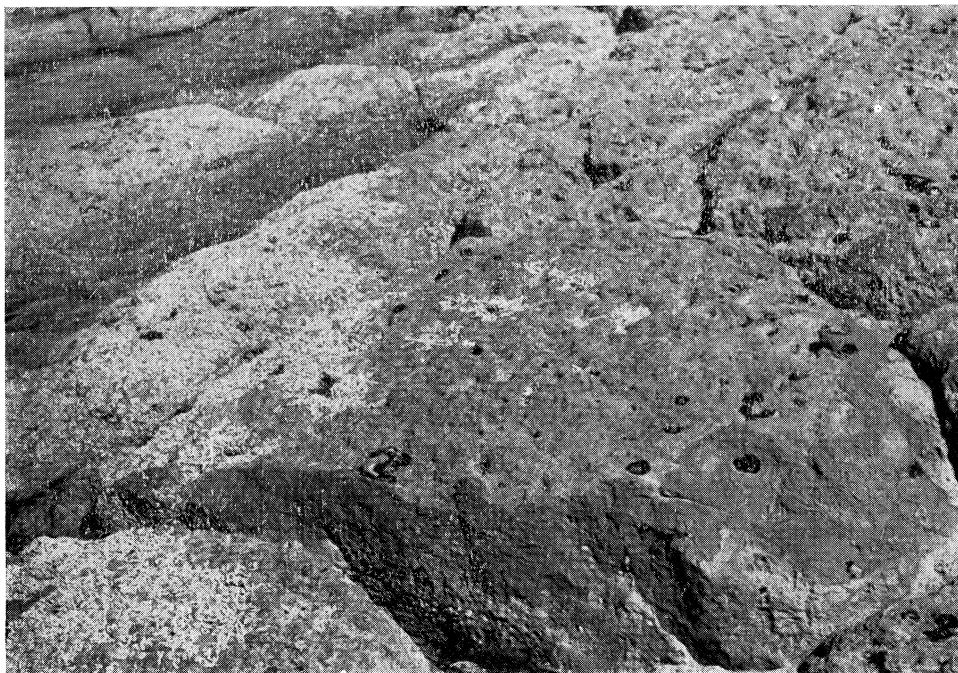


FIG. 2.—The shore at Little Oyster Cove showing the *Galeolaria* belt. The dark patches are *Lichina officinalis*.



FIG. 1.—*Mytilus-Hormosira* pool on the reefs at the Grange.



FIG. 2.—*Galcolaria* masses at Dodge's Ferry. The photograph was taken in December, 1949 before the thick masses were damaged.





FIG. 1.—*Pyura* on the rocks at Dodge's Ferry.

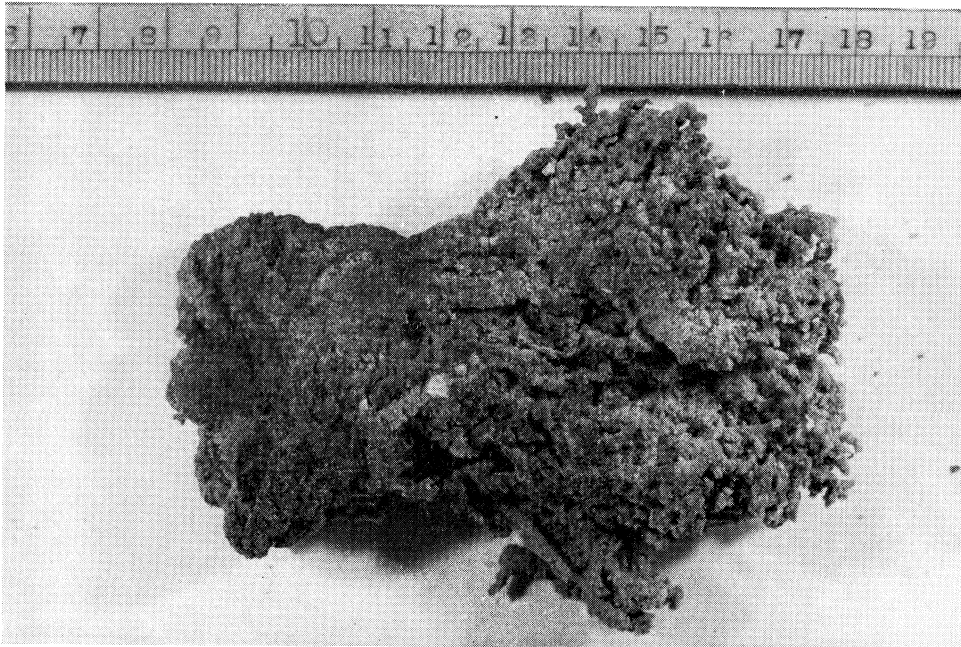


FIG. 2.—An Ascidian, *Pyura praeputialis*, from Dodge's Ferry showing the 'roots' which hold it to the substratum.

