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THE DISTRIBUTION OF POLYCHAETA IN OFFSHORE DEPOSITS IN THE IRISH SEA

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(Text-figs. 1 and 2)

The bottom fauna of the Irish Sea around the Isle of Man and off the coast of Cumberland has been investigated by Dr N. S. Jones, who has described the fauna in general (1940, 1951, 1952) and the Amphipoda in particular (1948). Apart from the Amphipoda the smaller animals have remained relatively unknown. To extend this earlier work a survey of the polychaetous worms was carried out during 1952–54, and this paper deals with their distribution and ecology in the offshore bottom deposits. New records and details of taxonomic interest have been published elsewhere (Southward, 1956).

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THE AREA INVESTIGATED

The area investigated during the 1952–54 survey was roughly the same as that studied by Jones (1951). To begin with all the collections were made within 10 miles of Port Erin but later the area was extended to include the deeper water to the west (Fig. 1).

The coastline of the southern half of the Isle of Man is steep and rocky and, except in the bays, the sea bottom slopes sharply from low-water mark to 10 fm. Below this depth the slope is more gradual and on the west side of the island the 50 fm. line is reached about 10 miles offshore. There is a channel about 70 fm. deep between the Isle of Man and Ireland. The sea to the south and east is shallower, the bottom is more irregular, and between the Isle of Man and England the depth rarely exceeds 20 fathoms.

The offshore grounds present a variety of habitats, most of which can be found within 10 miles of Port Erin. The deposits have been classified by Jones (1951) into four main types: (*a*) coarse sands, gravels including shell

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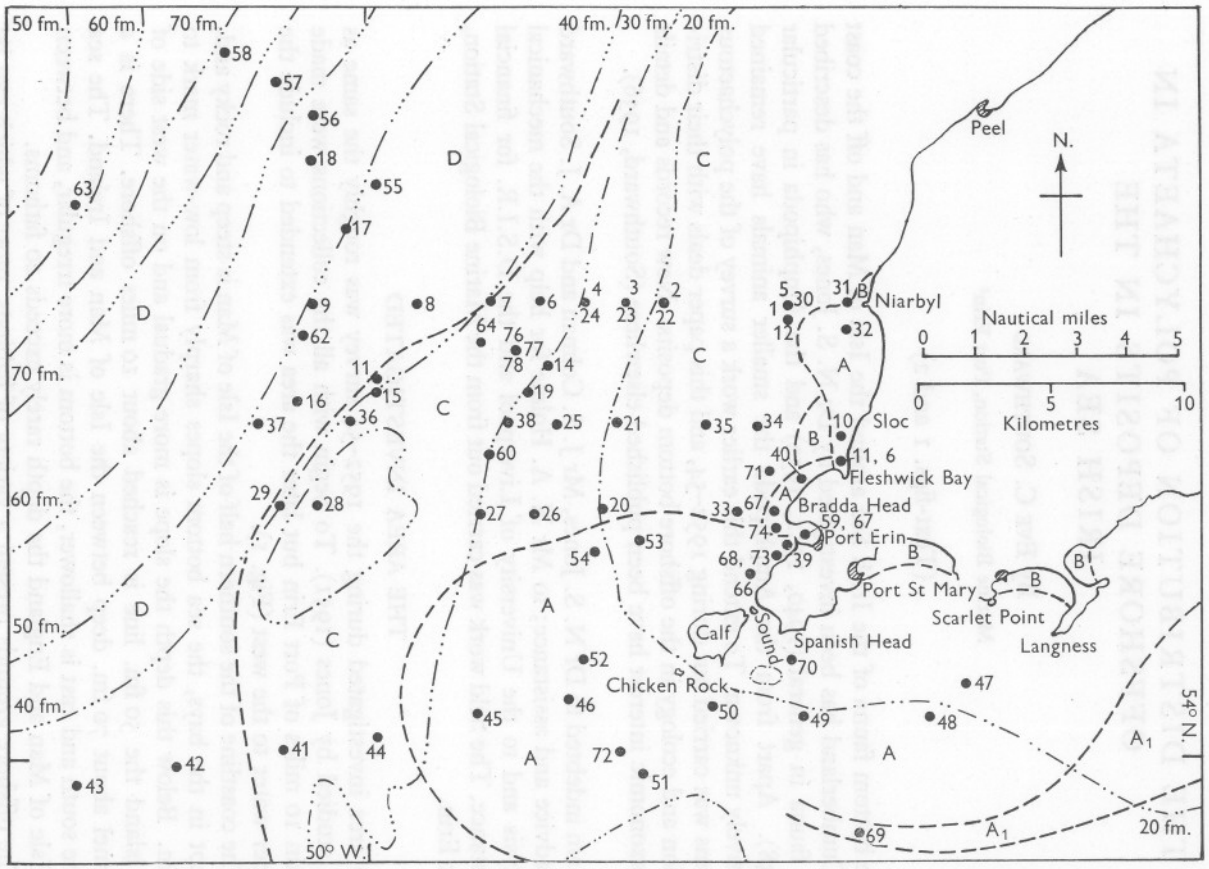

Fig. 1. Map of the south end of the Isle of Man, showing positions of offshore stations (numbers as in Table II). The heavy broken lines mark the approximate limits of the various deposits. A gravels (A_1 *Modiolus* epifauna); B clean sand; C muddy sand; D mud.

and stony gravels; (*b*) fine sand; (*c*) muddy sand; (*d*) mud. The approximate limits of these types of deposit (as determined by Jones) are marked by the heavy broken lines in Fig. 1. The deposits grade into one another and there are no sharp boundaries between them.

In this area the main factor controlling the grade of a deposit appears to be the amount of water movement over it. The tidal currents reach $3\frac{1}{2}$ knots at spring tides along the south coast of the island, and in places $4\frac{1}{2}$ knots. There are weaker currents inshore along the west coast, but in a large area to the west of the island they are too slight to be perceptible (*West Coast of England Pilot*, 1948). It is in this area that soft deposits are present in relatively shallow water. Wave action may be felt down to 25 fm., as this is the least depth at which mud is found (Jones, 1951).

The surface temperature of the sea off the south-west coast had a mean annual range of 6·5° C during 1903–12, according to Matthews (1914). The monthly mean was lowest in February, at 7·5° C (all depths) and highest in August at 13° C. At this time of year the bottom temperature was less than 10° C; it reached its maximum in November when the temperature at all depths was 12° C. During 1953 (Slinn, 1956) the temperature was lower than the mean in February (6–7° C at all depths) and higher than the mean in August (13·5–15° C at the surface and 11·5° C at 50 fm.). The maximum bottom temperature was recorded in October (13·3–13·7° C).

The salinity of the sea in the same area is about 34‰ with an annual variation of about 0·2‰ (Matthews, 1914).

METHODS

GEAR USED

Several different types of gear were used for obtaining bottom samples. The most useful was a van Veen type of grab sampler taking a sample of one-tenth of a square metre (Thamdrup, 1938). The depth to which this instrument would dig depended on the hardness of the deposit. It was most efficient on mud and muddy sand, where it probably dug to at least 15 cm. Dredges were used on deposits too hard for the grab sampler. A small naturalist's dredge, with a bowed frame (1 ft. 6 in. wide) and a stramin bag, was used for fine gravel or gravel mixed with sand; judging from the fragments of *Ensis* sp. sometimes brought up it could dig 4–8 cm into these deposits. A larger naturalist's dredge (2 ft. 6 in.) was occasionally employed on sand and fine gravel but was less efficient than the smaller one. Where the bottom was composed of coarse gravel a scallop dredge (4 ft. wide and lined with $\frac{3}{8}$ in. netting) was found most useful since the stramin of the small dredge was easily torn. It brought up only the coarse gravel and large stones, any fine material being washed out while the dredge was being hauled to the surface.

Depths were measured with an echo sounder and the positions of the stations calculated from compass bearings. A list of stations is given in Table II, and their positions are marked on Fig. 1.

TREATMENT OF COLLECTIONS

The contents of the scallop dredge were examined on board the boat, larger specimens being picked out and samples of stones, shells and hydroids kept for more detailed examination. The samples taken in the naturalist's dredges were not sorted on board, but the whole or part of the sample was taken back to the laboratory. Grab samples were washed through a 2 mm round-holed sieve with a jet of water from a hose, on board the boat, after which the entire residue on the sieve was retained for examination in the laboratory.

At the laboratory samples and specimens were either examined fresh, soon after arrival, or preserved, without sorting, in 5% sea water formalin.

Weeds, hydroids and shells were searched carefully, usually under a dissecting microscope, and the worms picked out. Gravel was sorted in two stages: first, the larger animals were picked out by hand, then the gravel was washed several times and the washing waters strained through fine bolting silk. In this way many small animals were retained, that would otherwise have been lost. The first residue from the grab samples was treated in the same way if it contained much gravel. If not, it was sorted by hand.

In the case of the grab samples, and those of the small dredge, all the macrofauna was preserved and the animals other than polychaetes identified at least as far as phyla. When the scallop dredge was used only the polychaetes were picked out, but notes were made on the abundance of other animals.

After identification the polychaetes were preserved in 70% alcohol, and a representative collection of species has been stored at Port Erin.

GRADE ANALYSIS OF DEPOSITS

Small samples of most types of offshore deposit were taken from hauls of the grab sampler and small dredge. These samples were dried and later subjected to the method of grade analysis used by Holme (1954). This method separates the sample into eight grades of particles: (i) over 2 mm diameter; (ii) 2–1 mm; (iii) 1–0·5 mm; (iv) 0·5–0·25 mm; (v) 0·25–0·21 mm; (vi) 0·21–0·124 mm; (vii) 0·124–0·0313 mm; (viii) less than 0·0313 mm. In addition, fragments over 10 mm in diameter were separated from the first group.

TAXONOMY

The names and classification used here are mainly those used by Fauvel (1923, 1927). Some of the species identified during the present survey are not included by Fauvel; references to descriptions of these are given in the taxonomic paper referred to above (Southward, 1956).

BOTTOM DEPOSITS

During the field work bottom deposits were identified fairly readily as belonging to the four main groups described by Jones (1951), but several subgroups could also be recognized.

The coarse grounds (Fig. 1, A) include more than one type of gravel. A wide area to the south of the Isle of Man is occupied by large stones, shells and coarse shell gravel and the same type of coarse shell gravel also occurs on

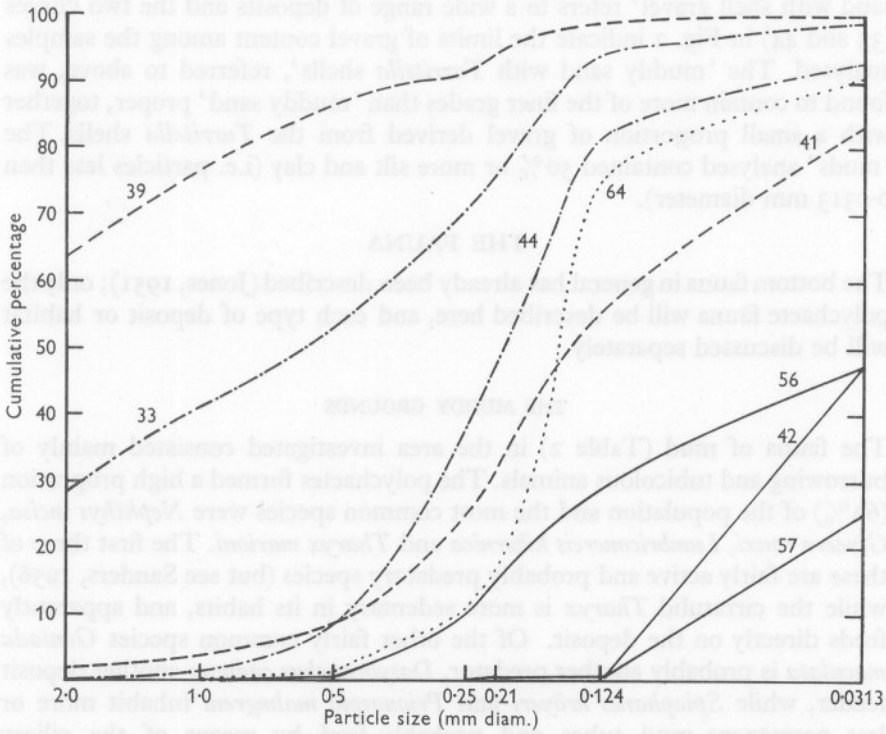

Fig. 2. The composition of various bottom deposits shown by means of cumulative curves. Station numbers as in Table II. ----, fine stony gravel; -·-·-·-, muddy sand with shell gravel; ·····, muddy sand; - - - - -, muddy sand with *Turritella* shells; ————, mud.

the west side of the island, off Bradda Head. Further north, between Fleshwick Bay and Niarbyl, there are deposits of fine stony gravel, which in places is mixed with larger stones or with nodules of coralline algae (*Lithothamnion* sp.). This algal deposit, mixed with muddy sand, also occurs to the west of Niarbyl.

Towards the outer limits of the coarse grounds the gravel is mixed with muddy sand, the proportion of which increases with depth until the pure

muddy sand grounds are reached (Fig. 1, C). The muddy sand in turn grades into mud in deeper water, and along the edges of the mud grounds (Fig. 1, D) the muddy sand may contain large numbers of empty shells of *Turritella communis* Lamarck.

Mechanical analysis (see p. 52) of the deposits from fourteen stations has shown that the differences noticed in the field were definitely differences in grade composition. The composition of the various deposits (Table 1) can be shown graphically by means of cumulative curves (Fig. 2). The term 'muddy sand with shell gravel' refers to a wide range of deposits and the two curves (33 and 44) in Fig. 2 indicate the limits of gravel content among the samples analysed. The 'muddy sand with *Turritella* shells', referred to above, was found to contain more of the finer grades than 'muddy sand' proper, together with a small proportion of gravel derived from the *Turritella* shells. The 'muds' analysed contained 50% or more silt and clay (i.e. particles less than 0·0313 mm diameter).

THE FAUNA

The bottom fauna in general has already been described (Jones, 1951); only the polychaete fauna will be described here, and each type of deposit or habitat will be discussed separately.

THE MUDDY GROUNDS

The fauna of mud (Table 2) in the area investigated consisted mainly of burrowing and tubicolous animals. The polychaetes formed a high proportion (62%) of the population and the most common species were *Nephthys incisa*, *Glycera rouxi*, *Lumbriconereis hibernica* and *Tharyx marioni*. The first three of these are fairly active and probably predatory species (but see Sanders, 1956), while the cirratulid *Tharyx* is more sedentary in its habits, and apparently feeds directly on the deposit. Of the other fairly common species *Goniada maculata* is probably another predator, *Dasybranchus caducus* another deposit feeder, while *Spiophanes kröyeri* and *Prionospio malmgreni* inhabit more or less permanent mud tubes and probably feed by means of the ciliary currents of the tentacles. A few species seem to be confined to mud; these are *Leanira tetragona*, *Paraonis gracilis*, *Dasybranchus caducus*, *Clymene gracilis* and *Rhodine loveni*, but all except *Dasybranchus* were rare, even in mud.

Thus, the majority of the polychaetes found in mud were either active, predatory species or non-selective deposit feeders. Selective deposit feeders, such as the spionids, were few, and the specialized filter-feeding sabellids and serpulids were absent.

THE MUDDY SAND GROUNDS

Where the bottom deposit was muddy sand with little or no gravel the main members of the polychaete fauna were the same as those of mud, but the

number of species present and the total population were much greater (Table 3). *Nephthys incisa* and *Glycera rouxi* were as abundant as in the mud, but *Lumbriconereis hibernica* and *Tharyx marioni* were rather less common. *Goniada maculata*, *Lumbriconereis gracilis*, *Spiophanes kröyeri*, *Chaetozone setosa*, *Diplocirrus glaucus*, *Owenia fusiformis*, *Myriochele heeri*, *Amphicteis gunneri*, *Trichobranchus glacialis* and *Terebellides stroemi* were all fairly common and characteristic species of this deposit. Most of these are sedentary species feeding on the deposit. *Owenia* has a crown of short ciliated tentacles with which it collects food as well as building its tube (Watson, 1900); *Myriochele* (a closely related species), though without tentacles, has a ciliated oral funnel with which it sets up a feeding current, and by closing this funnel it is able to reject unwanted particles. *Spiophanes*, *Diplocirrus*, *Amphicteis* and the terebellids probably feed by means of their ciliated tentacles (Blegvad, 1915; Hunt, 1925; Nicol, 1930; Mare, 1942; Dales, 1955). The cirratulid *Chaetozone* appears to feed directly on the deposit.

Among this largely burrowing and tubicolous polychaete population surface-living species were few, but probably all the aphroditids, except *Panthalis*, live on the surface of the deposit. Some of the tubicolous forms are dependent on sand grains or shell fragments for the formation of their tubes, for example *Owenia*, *Myriochele* and *Pectinaria* spp.; these are absent from mud and most common in the coarser muddy sands. Moreover, *Pectinaria* has a specialized method of feeding through a funnel in the deposit (Watson, 1928), which probably requires a fairly firm deposit for its construction.

MUDDY SAND WITH SHELL GRAVEL

Where shell gravel was mixed with the muddy sand the fauna was much richer, since it included most of the muddy sand species together with many of those from shell gravel; the number of species of Polychaeta (122) found in this deposit was greater than in any other investigated. The average density of the population was also fairly high (221 per m^2) though it formed less than 50% of the macrofauna. Most of the common species were burrowing or tubicolous, but with a greater gravel content the number of wandering and fixed species increased.

The most abundant species were *Lumbriconereis gracilis*, *L. hibernica* and *Owenia fusiformis*; the latter occurred at all stations and sometimes exceeded 100 per m^2 (Table 4). The other two were almost equally widely distributed but were less numerous. The other characteristic species of this mixed deposit were mainly burrowers and included *Nephthys incisa*, *Glycera rouxi*, *Goniada maculata*, *Eone nordmanni*, *Notocirrus scoticus* (all probably predators), *Laonice cirrata*, *Heterocirrus zetlandicus*, *Myriochele heeri*, *Amphicteis gunneri* and *Pectinaria auricoma* (deposit feeders of various types). The serpulid *Hydroides norvegica* was common on the larger shell fragments.

Polynoids, phyllodocids and syllids were more common in this mixed

deposit than in muddy sand alone and many species of the two latter groups were found in crevices in shell fragments. The sabellid *Potamilla reniformis* was also found in crevices, two others (*Euchone rubrocincta* and *Chone suspecta*) were found, apparently free-living, among gravel.

THE FINE GRAVEL GROUNDS

Fine shell gravel

Of the fine gravels the fine shell had the richest fauna, and the polychaetes formed a higher proportion of the total macrofauna than in the other two. This deposit also contained the greatest number of polychaetes per square metre of any of the grounds investigated with the grab sampler, although this was the ground on which the grab obtained the smallest samples. Thus, the population may be considerably greater than that shown by this survey.

The most common polychaetes (Table 5) were *Pholoë minuta*, *Syllis armillaris*, *Glycera lapidum*, *Nematonereis unicornis*, *Laonice cirrata*, *Aonides paucibranchiata*, *Owenia fusiformis*, *Polycirrus denticulatus* and *Hydroides norvegica*. The first four of these are active and may be carnivorous, *Laonice* does not seem to form a permanent tube and its large eye-spots suggest that it also has an active mode of life, but its feeding is probably ciliary, as in other spionids. The only common tubicolous polychaete among the infauna was *Owenia fusiformis*. *Onuphis conchylega* and *Eunice harassi* were found occasionally among the epifauna; these two species build tubes of gravel and shell fragments but, unlike *Owenia*, they can move about, dragging their tubes with them (Watson, 1903).

Sabellids and serpulids were common in fine shell gravel, the serpulids being attached to shell fragments. These two groups appear to be most common where there is some water movement.

Fine stony gravel

The fine stony gravels provide a rather similar habitat to the shell gravel but the density of the population appears to be lower. However, as the grab sampler was not used, this conclusion is only tentative. The percentage of polychaetes in the total population was lower than in either of the other fine gravels. *Glycera lapidum*, *Capitomastus minimus*, *Aonides paucibranchiata* and *Pista cristata* were the most common species (Table 5), except at station 34, where the gravel was mixed with muddy sand and large stones. Here many of the species were more characteristic of muddy sand than of stony gravel. *Scalisetosus pellucidus* was probably commensal with the ophiuroid *Ophiothrix fragilis*, which was present in large numbers.

Coralline gravel

The 'coralline' gravels were composed of irregular nodules of a species of *Lithothamnion*, mixed with muddy sand. While some of the animals were

characteristic of muddy sand, the fauna as a whole had more in common with that of the fine gravels. The polychaetes formed nearly 60% of the total macrofauna and the most common species were *Pholoë minuta*, *Lumbriconereis gracilis*, *Glycera lapidum*, *Nematonereis unicornis*, *Laonice cirrata*, *Capitomastus minimus* and *Pista cristata* (Table 5). *Lumbriconereis gracilis* appeared to be most common in mixed deposits of muddy sand and gravel, while *Capitomastus* and *Pista cristata* were more characteristic of stony gravels. The other species were common in fine shell gravel.

Thus, the polychaete fauna of all the fine gravels consisted mainly of active species, some burrowing (notably *Glycera lapidum*) and some living on the surface. Tubicolous species were few, except for the serpulids of the shell gravels. Few of the species feed directly on the deposit, without selection, and many of the active ones are probably predators.

THE COARSE GRAVEL GROUNDS

The fauna of coarse gravels appeared to be poorer than that of the fine gravels, but it is possible that further sampling and more careful examination of the gravel would reveal more species. Many tubicolous polychaetes were found in cracks and holes, but the external species were rather few and corresponded to the epifauna of the fine gravels. The common species of Polychaeta were mainly polynoids, sabellids and serpulids. *Halosydna gelatinosa* was fairly common, *Platynereis dumerilii* was frequent where there were fragments of algae among the gravel (it has been observed feeding on these), and the terebellid *Polymnia nebulosa* was common on large shell fragments. Both *Platynereis* and *Polymnia* inhabit semi-permanent mucous tubes. The serpulids occurred on shells and stones; *Pomatoceros triqueter* was the most common, being found on most shells and stones in every haul, while *Serpula vermicularis* and *Hydroides norvegica* were less common than *Pomatoceros* but nevertheless fairly frequent. *Sabellaria spinulosa* formed tubes of sand on shells and was widely distributed though not abundant.

Large stones had a surface fauna of *Pomatoceros* and *Hydroides* together with some polynoids, but the latter were more common in holes and crevices (Table 6). An examination of several lumps of limestone bored by *Hiatella* (station 50) showed the most common crevice-living species to be *Lepidonotus squamatus*, *Syllis armillaris*, *Autolytus aurantiacus* and *Polydora caeca*. The bigger holes in a large rock from station 74 contained many *Polymnia nebulosa* and several *Dasychone bombyx*, but the smaller species were not fully investigated. At station 32 the coarse stony gravel was mixed with muddy sand and the fauna as a whole was rather sparse, consisting mainly of muddy sand species, though the polynoid *Harmothoë impar* was common on the stones.

Crevices and holes in shells

The fauna of crevices in shells included many of the species found in holes in stones and also some boring forms. Of the polychaetes, only some species of *Polydora* and *Dodecaceria* are definitely known to bore into shells (e.g. Söderström, 1923), but it is possible some other species may do so. The burrows of *Polydora*, *Cliona* (the boring sponge) and *Phoronis ovalis* Wright were common in shells and shell fragments, and these were utilized by many other animals, some of which form their own tubes inside. The polychaetes appeared to be the most common animals in this habitat and thirty-two species were found (Table 7). The commonest and most widespread were *Syllis armillaris*, *Nematonereis unicornis*, *Polydora caeca*, *Polycirrus denticulatus* and *Potamilla reniformis*, but *Syllis variegata*, *Autolytus aurantiacus*, *Polydora ciliata*, *P. flava* and *Lumbriclymene minor* were sometimes common. Syllids and phyllodocids were abundant in this habitat but only one aphroditid, *Pholoë minuta*, was found. Oyster shells (*Ostrea edulis* L.) contained a large number of species but those of other molluscs (*Modiolus*, *Pecten* and *Glycimeris*) had a poorer fauna. Many of the species found in shells also inhabited the empty tubes of serpulids.

Hydroids

Several species of hydroids were common on shells and stones in the gravel deposits. They had a characteristic fauna, consisting mainly of polychaetes (Table 8), which differed from the gravel fauna. The serpulids *Hydroides norvegica* and *Spirorbis spirillum* were common, the latter often abundant. Many syllids lived among the branches, usually in their own mucous tubes, and several aphroditids were found, though some of these may have been inhabitants of the gravel on which the hydroids grew. Members of these two families may feed on the hydroids, but most of the other polychaetes are detritus—or filter—feeders.

Sponges

Sponges as well as hydroids are part of the epifauna of coarse gravel, and they also have a typical fauna. They were most frequent on and among the shells of *Modiolus modiolus* (L.), which are common in an area to the south-west of the Isle of Man (Fig. 1, A_1). This fauna has not been much investigated, but *Syllis spongicola* seems to be the most characteristic species. A few other syllids were found, notably *S. armillaris*, but they were also common species on hydroids and gravel.

THE CLEAN SAND GROUNDS

The offshore clean sand (Fig. 1, B) was sampled only in Port Erin Bay and off Niarbyl. A series of grab samples taken in Port Erin Bay (Table 9,

station 59) indicated a fauna fairly rich in species of polychaetes and similar to that found at E.L.W.S. on the beach (c.f. Pirrie, Bruce & Moore, 1932; Moore, 1933). The grab sampler did not dig very deeply on this sand and the samples cannot have included the deeper burrowing animals; however, the number of animals per m^2 at 3–4 fm. exceeded the number found at E.L.W.S. on the beach. Two dredge hauls in the bay (65) brought up rather more surface-living species than the grab sampler. The common polychaetes, on or near the surface, were *Sthenelais limicola*, *Kefersteinia cirrata* and *Pista cristata*, while the common tubicolous and burrowing species were *Scoloplos armiger*, *Chaetozone setosa* and *Clymene oerstedii*. None of the three surface-living species has been found in the sandy beach, but *Scoloplos* is a characteristic intertidal species and *Clymene* is fairly common around and below M.L.W.S.

A small area of sand near Niarbyl was also sampled (31) and *Scoloplos armiger* and *Heterocirrus zetlandicus* were found to be common. Single specimens of *Nephthys cirrosa* were taken at Niarbyl and Port Erin, and the species may be common in the lower layers of the sand, which were not reached by either the grab sampler or the dredge.

DISCUSSION

The results of this survey indicate that many species of Polychaeta are widely distributed in the various types of habitat examined, but that, nevertheless, the polychaete fauna of each is distinctive. The density of the population varies very much with the type of deposit, as does the number of species present (Table 10). Environmental factors, apart from differences in the deposit, appear to have little effect on the fauna. Any direct effect of water movement on the fauna is masked by its effect on the composition of the deposit and these two factors cannot be separated. Differences in depth, unaccompanied by differences in the deposit, appear not to have much influence on the composition of the fauna. However, the depths in the area studied are comparatively small.

Most of the habitats examined were composite. That is, the softer deposits contained gravel and the gravels contained some sand or muddy sand. This may account for the wide distribution of some species. For example, seven species were found in all four main types of deposit but, of these, four glycerids, *Glycera rouxi*, *G. gigantea*, *Goniada maculata* and *Eone nordmanni*, are more characteristic of soft deposits and only occur in gravel where it is mixed with sand or muddy sand. *Nematonereis unicornis* occurs in all four deposits but is always associated with gravel, often living in crevices in shell fragments. The other two species, *Mystides limbata* and *Glycera convoluta*, are not common in any deposit and their distribution is rather sporadic.

The extent of the distribution of each species appears to depend mainly on

its mode of life and feeding habits. Thus, carnivorous species are found in all habitats, but the burrowing forms, such as *Nephthys*, are restricted to the softer deposits, while the surface-living forms, such as the aphroditids, are more common on the harder grounds. Tubicolous species, such as *Owenia* and *Pectinaria*, are limited in their distribution by their dependence on definite sizes of particles for the formation of their tubes, while the serpulids require hard substrata for the attachment of their calcareous tubes. The distribution of filter-feeders may be limited by high concentrations of silt in the water, for no serpulids or sabellids were found in the mud, and few were found in the muddy sand (cf. Loosanoff & Tommers, 1948).

There were many examples of related species, of similar body form, being found in very different types of deposit. Thus, the Capitellidae were represented by *Dasybranchus caducus* in mud, *Notomastus latericeus* in muddy sand, *Capitomastus minimus* in fine gravel and *Capitella capitata* in sand. Again, the common species of *Lumbriconereis* (Eunicidae) in mud and muddy sand was *L. hibernica*, while *L. fragilis* was characteristic of coarse gravel and *L. gracilis* was common in the intermediate types of deposit. The factors involved in the distribution of these species may include the method of reproduction and the larval development and settlement (cf. Thorson, 1950; Wilson, 1952), as well as possible differences in feeding habits or food. Unfortunately, very little information is available on the reproduction of any species, since sampling was insufficient for detailed investigation of the breeding period or annual fluctuations in the population of the various species.

The numerical proportion of polychaetes was high in comparison with the other main faunistic groups at all stations where the animals were counted (Table 10). However, on the muddy grounds the heart-urchin *Brissopsis* and the crustacean *Calocaris* appear to form the greater part of the population by weight, though present in small numbers, and in the coarser grounds the Mollusca (or sometimes the Ophiuroidea) probably form the greatest proportion.

The density of the polychaete population on the grounds surveyed is low compared with that of some other British localities, and the species rarely attain the maximum size recorded by other authors. The maximum population found was 575 polychaetes per m^2 (station 19), and this compares badly with, for example, the 2000 per m^2 in the Rame mud near Plymouth (Mare, 1942).

The paucity of the fauna may be correlated with the low biomass found by Jones (1951, 1952) for the offshore grounds of the Isle of Man, compared with the grounds off the Cumberland coast. He considered that the low biomass was associated with a low run-off from the land in the area, and a low concentration of organic matter in the bottom deposits.

SUMMARY

During 1952–54 a survey was made of the Polychaeta living in the offshore bottom deposits of the south of the Isle of Man. These deposits range from stones and coarse gravel to soft mud; samples were obtained with a van Veen grab sampler and various dredges.

It was found that, although some species were widely distributed, each bottom deposit had a typical fauna, and that where the deposits graded into one another the polychaete fauna was also mixed. The distribution of each species appears to depend mainly on its mode of life and feeding habits; some can exist in several types of deposit or habitat, while others are very much restricted in their distribution.

The Polychaeta formed a high proportion, numerically, of the macrofauna, exceeding any other animal group, except possibly in the coarse gravels. However, the density of the polychaete population was low compared with other areas of the British Isles, and this may be correlated with the comparatively low biomass in the area.

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TABLE 1. GRADE COMPOSITION OF SOME OFFSHORE DEPOSITS

Station	Particle size (mm diameter) >10 %	10–2·0 %	2·0–1·0 %	1·0–0·5 %	0·5–0·25 %	0·25–0·21 %	0·21–0·124 %	0·214–0·0313 %	<0·0313 %	Type of deposit	Depth (fm.)
39	16·8	49·69	12·77	10·28	4·57	3·45	4·22	0·84	0·28	Fine stony gravel	5
33	14·17	14·592	12·633	11·972	17·934	5·432	17·618	4·407	1·253	Muddy sand and shell	17
35	6·2	2·737	1·935	5·895	28·228	11·790	30·609	8·225	4·380		18
60	0	0·592	3·069	8·375	30·538	12·549	33·850	5·385	5·639		31
45	0	6·070	9·844	9·811	21·766	9·926	23·571	9·734	9·269		32
44	0	0·020	1·270	6·803	29·468	10·143	32·542	12·623	7·127		34
64	0	0	0·165	1·437	9·125	6·139	58·652	15·126	9·349	Muddy sand	37
41	0	2·162	1·948	3·934	17·029	6·592	24·136	27·609	16·586	Muddy sand and *Turritella* shells	35
61	0	0·082	0·601	2·405	10·032	4·756	30·836	28·403	22·881		41
43	0	0	0·080	0·040	0·080	0·040	0·240	50·061	49·503	Mud	35
42	0	0	0·035	0·035	0·105	0·035	0·140	47·377	52·270		38
56	0	0·141	0·100	0·463	9·651	5·138	13·439	19·021	52·043		58
57	0	0·033	0·067	0·067	0·067	0·033	0·336	24·789	74·604		65
58	0	0·028	0·056	0·056	0·085	0·056	0·226	29·553	69·935		70

TABLE 2. POLYCHAET FAUNA OF MUD GROUNDS

(As number per square metre.)

Station number	*43*	*42*	*15*	*7*	*16*	*8*	*9*	*17*	*37*	*62*	*55*	*18*	*56*	*63*	*57*	*58*
Depth (fathoms)	35	38	40	40	45	45	50	50	50	50	53	55	58	60	65	70
Number of grab hauls	3	3	5	5	5	5	5	5	3	3	2	5	2	3	2	2
Species																
Panthalis oerstedi	—	—	—	—	—	2	—	—	—	—	—	—	—	—	—	—
Leanira tetragona	—	—	—	—	2	—	—	—	—	—	—	—	—	—	—	—
Mystides limbata	—	—	—	—	—	—	—	—	7	3	—	—	—	—	—	—
Ophiodromus flexuosus	—	—	—	—	—	—	2	—	—	—	—	—	5	—	—	—
Ancistrosyllis groenlandica	—	3	4	—	—	—	—	2	3	—	—	—	—	—	—	—
Nephthys incisa	7	20	18	10	10	12	2	12	23	10	15	2	15	7	—	15
Glycera convoluta	—	—	—	—	—	—	—	—	—	—	5	—	—	—	—	—
G. gigantea	—	—	—	—	—	—	2	2	—	—	—	—	—	—	—	—
G. rouxi	7	7	2	6	10	8	6	2	13	7	5	2	5	7	—	5
Goniada maculata	3	—	4	4	2	4	—	—	3	—	—	—	—	—	—	—
Eone nordmanni	—	—	4	—	—	—	—	—	—	—	—	—	—	—	—	—
Nematonereis unicornis	—	—	—	—	—	—	2	—	—	—	—	—	—	—	—	—
Lumbriconereis hibernica	33	17	4	12	8	14	10	6	23	7	15	8	5	10	5	15
L. gracilis	—	—	—	—	—	—	2	—	—	—	—	—	—	—	—	—
Spiophanes kroyeri	—	—	4	2	12	4	—	4	7	3	—	—	—	3	—	10
Polydora sp.	—	—	—	—	2	—	—	—	—	—	—	—	—	—	—	—
Prionospio malmgreni	—	—	—	—	—	—	2	2	7	—	5	6	—	—	—	10
Paraonis gracilis	—	—	—	—	—	—	—	—	—	2	3	2	—	7	—	—
Tharyx marioni	13	10	—	4	12	18	22	6	20	13	15	6	25	37	20	35
Diplocirrus glaucus	—	—	—	—	—	2	—	—	—	—	—	—	—	—	—	—
Scalibregma inflatum	—	—	2	—	—	—	—	—	—	—	—	—	—	—	—	—
Dasybranchus caducus	—	3	6	4	2	10	—	2	3	3	—	—	—	—	10	—
Ammotrypane aulogaster	—	—	—	4	—	2	2	2	—	—	—	—	5	—	—	—
Clymene gracilis	—	—	—	—	—	—	2	—	—	—	—	—	—	—	—	—
Rhodine loveni	—	—	—	—	—	—	—	2	—	—	—	—	5	7	10	—
Ampharete grubei	—	—	2	—	—	—	—	—	—	—	—	—	—	—	—	—
Pectinaria sp.	—	—	2	—	—	—	—	—	—	—	—	—	—	—	—	—

TABLE 3. POLYCHAET FAUNA OF MUDDY SAND

(As number per square metre.)

Station number	*3*	*23*	*4*	*24*	*19*	*6*	*41*	*64*	*29*	*36*	*61*
Depth (fathoms)	25	25	30	30	30	35	35	37	40	40	41
Number of grab samples	5	5	5	5	5	5	3	5	3	3	3
Species											
Aphrodite aculeata	2	—	2	—	—	—	—	—	—	—	—
Harmothoë antilopis	—	—	2	—	—	—	—	—	—	—	—
Lagisca extenuata	—	—	—	—	—	—	—	2	3	—	—
Polynoë kinbergi	—	—	2	—	—	—	—	—	—	—	—
Panthalis oerstedi	—	—	—	—	—	—	—	—	3	—	—
Phyllodoce mucosa	—	—	—	—	—	—	—	—	—	3	—
Eulalia sanguinea	—	—	—	—	2	—	—	2	—	—	—
Protomystides bidentata	2	—	—	—	—	—	—	—	—	—	—
Mystides limbata	—	—	—	—	—	—	3	—	3	7	3
Phyllodocidae: unidentified	—	—	—	—	—	—	—	2	—	—	—
Ophiodromus flexuosus	—	—	2	2	—	—	—	—	—	—	—
Hesionidae: unidentified	—	—	—	—	—	—	—	—	3	—	—
Ancistrosyllis groenlandica	—	2	—	6	2	4	—	2	—	—	—
Exogone gemmifera	—	—	—	—	2	—	—	—	—	—	—
Autolytus aurantiacus	—	2	—	—	—	—	—	—	—	—	—
Nephthys incisa	14	10	10	12	3	16	20	10	17	30	13
N. hombergi	—	2	2	—	—	—	—	—	—	—	—
Glycera rouxi	2	2	2	8	—	18	7	—	13	7	10

TABLE 3 (*continued*)

Station number ...	*3*	*23*	*4*	*24*	*19*	*6*	*41*	*64*	*29*	*36*	*61*
G. gigantea	—	—	—	—	—	2	—	—	—	—	—
G. convoluta	—	—	—	—	—	—	—	—	—	3	—
Goniada maculata	—	6	6	2	6	2	3	14	—	3	—
Eone nordmanni	—	—	—	—	—	4	—	—	—	7	—
Lumbriconereis hibernica	4	4	2	14	—	14	7	2	3	10	3
L. gracilis	6	8	2	6	4	2	7	2	—	—	—
Notocirrus scoticus	—	6	2	2	2	—	—	4	—	—	—
Drilonereis filum	—	—	—	—	—	2	—	—	—	—	—
Nerinides tridentata	—	2	—	2	—	2	—	2	—	3	—
Laonice cirrata	12	—	—	—	—	—	—	—	—	—	—
Spiophanes bombyx	—	10	—	—	4	6	—	—	—	3	—
S. kröyeri	—	14	12	10	24		10	2	—	3	3
Polydora flava	—	—	—	—	—	—	3	2	—	—	—
Prionospio malmgreni	—	10	—	6	2	6	—	6	—	10	—
P. steenstrupi	—	—	4	—	—	—	—	—	—	—	—
Aricidea branchiata	—	2	—	—	—	—	—	—	—	—	—
Paraonis lyra	—	—	—	—	—	—	3	—	—	—	—
P. gracilis	—	—	—	—	—	—	—	—	—	—	3
Chaetopterus variopedatus	—	—	—	—	—	—	—	2	—	—	—
Heterocirrus zetlandicus	—	—	—	—	4	—	—	8	—	—	—
Heterocirrus sp.	—	8	—	—	—	—	—	—	—	—	—
Chaetozone setosa	2	10	6	4	6	—	—	—	—	3	—
Tharyx marioni	—	2	—	6	2	4	10	2	10	20	43
Diplocirrus glaucus	2	4	4	—	10	—	3	8	—	13	—
Scalibregma inflatum	—	—	—	—	—	—	—	2	—	3	—
Notomastus latericeus	—	6	—	6	—	—	—	2	—	—	—
Dasybranchus caducus	—	—	—	—	—	—	—	—	—	—	3
Owenia fusiformis	26	192	16	2	386	—	—	12	—	—	—
Myriochele heeri	8	12	20	2	46	—	3	62	—	3	—
Ammotrypane aulogaster	2	—	—	—	—	—	—	—	—	—	—
Rhodine loveni	—	—	—	—	2	—	—	—	—	—	—
Clymene affinis	—	2	—	2	8	—	—	12	—	6	—
Clymene sp.	—	2	—	—	—	—	—	—	—	—	—
Leiochone clypeata	—	2	—	—	—	—	—	—	—	—	—
Ampharete grubei	—	—	—	2	6	—	—	—	—	3	—
Amphicteis gunneri	6	6	8	2	2	4	—	—	3	—	—
Sabellides octocirrata	—	—	—	—	4	—	—	—	—	—	—
Pectinaria auricoma	8	8	4	—	10	—	—	—	—	3	—
P. koreni	2	6	2	—	14	—	—	—	—	—	—
Pista cristata	—	2	—	—	—	—	—	—	—	—	—
Thelepus cincinnatus	—	—	—	—	2	—	—	—	—	—	—
Polycirrus denticulatus	—	—	2	—	—	2	—	—	—	—	—
P. plumosus	—	—	2	—	6	—	—	—	3	—	—
Trichobranches glacialis	—	10	10	—	6	2	—	2	—	7	—
Terebellides stroemi	2	10	8	2	2	—	—	4	—	7	—
Sabella pavonina	—	—	—	—	2	—	—	—	—	—	—

TABLE 4. POLYCHAET FAUNA OF MUDDY SAND MIXED WITH SHELL GRAVEL

(Number per square metre or relative abundance.)

Station number ...	*33*	*35*	*2*	*22*	*13*	*25*	*28*	*14*	*38*	*60*	*45*	*44*	*76*	*77*	*78*
Depth (fathoms) ...	17	18	20	20	20	25	29	30	30	31	32	34	35	35	35
Dredge (D) or grab (G) ...	D	D	G	G	G	G	G	G	G	G	D	D	G	G	G
Number of samples ...	1	1	5	4	5	5	3	5	3	3	1	1	10	10	10
Species															
Aphrodite aculeata	—	p	—	—	2	—	—	—	—	—	—	p	2	—	—
Lepidonotus squamatus	—	—	—	3	—	—	—	—	—	—	—	—	—	—	—
Harmothoë impar	p	p	—	—	—	—	—	—	—	—	p	—	—	—	—

TABLE 4 (*continued*)

Station number	... 33	35	2	22	13	25	28	14	38	60	45	44	76	77	78
H. antilopis	—	—	6	—	—	—	7	2	—	—	—	—	1	—	2
H. haliaeti	—	—	—	—	2	—	—	—	—	—	—	—	—	—	—
H. longisetis	—	p	—	3	—	2	—	—	—	—	—	—	—	—	1
H. sp.	—	—	—	—	—	—	—	—	—	—	—	—	—	1	—
Lagisca extenuata	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1
Sthenelais minor	—	—	4	—	—	—	—	—	—	—	—	—	—	—	—
Pholoë minuta	p	p	2	3	2	—	3	—	—	—	p	—	—	—	—
Phyllodoce mucosa	—	—	—	—	—	—	—	2	—	—	—	—	—	—	—
Eulalia bilineata	p	—	—	—	12	—	—	—	—	—	—	—	—	—	—
E. fucescens	p	p	—	—	—	—	—	—	—	—	—	—	—	—	—
E. sanguinea	p	—	2	—	—	2	—	—	—	—	—	—	—	—	2
E. macroceros	—	—	4	—	—	—	—	—	—	—	—	—	—	—	—
Notophyllum foliosum	—	—	—	3	—	—	—	—	—	—	p	—	—	—	—
Eteone longa	p	p	2	—	—	—	—	—	—	—	—	—	—	—	—
Protomystides bidentata	—	—	—	—	6	—	—	—	—	—	—	—	—	—	—
Mystides limbata	—	—	—	6	6	2	—	—	3	7	—	—	—	—	—
Phyllodocidae: unidentified	—	—	—	—	—	2	—	—	—	—	—	—	1	1	—
Podarke pallida	p	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Castalia punctata	p	p	—	5	—	2	—	—	—	—	—	—	—	—	—
Ancistrosyllis groenlandica	—	—	—	—	—	—	—	2	3	—	—	—	—	—	—
Syllis variegata	—	p	—	—	2	—	—	—	—	—	—	—	—	—	—
S. armillaris	c	—	4	—	28	—	—	—	—	—	p	—	—	—	—
S. cornuta	—	—	—	—	4	2	3	2	7	—	—	—	—	—	—
Eusyllis blomstrandi	—	p	—	3	—	—	—	—	—	—	—	—	—	—	—
Odontosyllis fulgurans	p	—	—	—	—	—	—	—	—	—	—	—	—	—	—
O. gibba	p	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Eurysyllis tuberculata	p	—	—	—	—	—	—	—	—	3	—	—	—	—	—
Exogone gemmifera	—	—	—	—	—	2	—	—	—	—	—	—	—	—	—
E. verugera	—	—	—	3	—	—	—	—	—	—	—	—	—	—	—
E. hebes	p	—	—	3	—	—	—	—	—	—	—	—	—	—	—
Sphaerosyllis hystrix	p	—	—	—	2	—	—	—	—	—	—	—	—	—	—
Autolytus aurantiacus	p	—	—	3	—	—	—	—	—	—	—	—	—	—	—
Nereis pelagica	—	p	—	—	—	—	—	—	—	—	—	—	—	—	—
Nephthys incisa	—	p	4	3	—	6	3	4	—	—	—	p	19	36	10
N. hombergi	—	—	—	—	—	—	—	—	—	—	—	p	—	—	—
N. rubella	—	—	2	—	—	—	—	—	—	—	—	—	—	—	—
Ephesia gracilis	p	p	—	—	—	—	—	—	—	—	—	—	—	—	—
E. periphatus	p	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Glycera rouxi	—	p	—	5	12	—	27	2	13	—	p	p	6	2	3
G. gigantea	—	—	—	—	—	4	—	—	7	—	—	—	—	2	1
G. convoluta	—	p	6	—	—	—	—	—	—	—	—	p	—	—	—
G. lapidum	c	—	8	8	4	—	—	—	—	3	p	—	—	—	—
G. capitata	—	—	2	—	—	—	—	—	—	—	—	—	—	—	—
Goniada maculata	—	p	—	3	6	—	27	—	7	—	p	c	6	2	9
G. norvegica	—	—	—	3	2	—	—	—	—	—	p	—	—	—	—
Eone nordmanni	p	p	4	3	2	—	—	2	—	—	—	p	2	1	3
Eunice harassi	p	p	—	—	—	—	3	—	—	—	—	p	—	—	1
Onuphis conchylega	p	p	—	3	—	2	3	2	7	—	—	p	—	—	3
Nematonereis unicornis	c	c	4	3	46	2	—	—	3	23	p	—	—	—	—
Lumbriconereis gracilis	c	c	4	20	12	4	13	10	33	7	—	p	9	1	6
L. latreilli	p	—	—	—	—	—	3	—	7	—	—	—	—	—	—
L. impatiens	—	—	—	—	—	—	—	4	—	—	—	—	—	—	—
L. hibernica	p	p	8	8	14	4	17	2	17	3	—	p	3	4	4
L. fragilis	—	—	—	—	—	—	—	—	—	—	—	—	1	1	—
Notocirrus scoticus	—	p	2	8	4	—	23	6	7	—	—	p	5	—	4
Drilonereis filum	—	—	2	—	—	—	—	—	—	—	p	—	—	—	—
Eunicidae: unidentified	—	—	—	—	2	—	—	—	—	—	—	—	—	—	—
Aricia cuvieri	—	—	—	—	—	—	—	—	3	—	p	—	—	1	—
Aricidea suecica	—	—	—	—	—	—	—	—	—	—	—	—	1	—	—
A. minuta	—	—	—	—	—	—	—	—	—	—	—	p	—	—	—
A. branchiata	—	—	—	—	—	—	3	—	—	—	—	—	—	—	—
Laonice cirrata	—	p	14	30	6	4	3	2	7	7	—	—	9	—	11

TABLE 4 (*continued*)

Station number	... 33	35	2	22	13	25	28	14	38	60	45	44	76	77	78
Aonides paucibranchiata	p	—	4	—	4	—	—	—	—	—	—	—	—	—	—
Spiophanes bombyx	—	—	—	—	4	2	—	8	—	—	—	—	4	—	—
S. kröyeri	—	—	—	8	—	6	23	—	3	—	p	—	4	1	5
Polydora flava	p	p	—	—	2	—	—	—	—	—	—	—	1	—	—
P. ciliata	—	—	—	—	14	—	—	—	—	—	—	—	—	—	—
P. caulleryi	—	—	—	3	—	—	—	—	—	—	—	—	—	—	—
Polydora sp.	—	—	2	—	—	—	—	—	—	—	—	—	—	—	—
Prionospio malmgreni	—	—	—	—	—	—	7	—	—	—	—	—	2	—	1
P. steenstrupi	—	—	—	—	—	—	—	2	—	—	—	—	2	—	2
Poecilochaetus serpens	—	—	—	3	—	—	—	—	—	—	p	—	1	1	—
Phyllochaetopterus socialis	—	p	—	—	—	—	—	—	—	—	—	—	—	—	—
Heterocirrus zetlandicus	c	c	—	8	32	4	3	—	3	7	p	p	1	—	—
H. caput-esocis	p	p	—	—	2	2	—	—	—	—	—	—	—	—	—
Tharyx marioni	—	—	—	8	2	2	13	—	3	1	p	—	—	1	—
Chaetozone setosa	—	—	6	3	2	2	3	6	—	—	—	—	10	—	11
Dodecaceria concharum	—	—	2	—	—	—	—	—	—	—	—	—	—	—	—
Macrochaeta clavicornis	p	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Zeppelinia dentata	—	—	—	—	2	—	—	—	—	—	—	—	—	—	—
Diplocirrus glaucus	—	—	—	—	—	2	—	2	3	—	—	—	1	7	7
Scalibregma inflatum	p	—	—	—	—	—	—	—	—	—	—	p	—	—	—
Notomastus latericeus	—	p	—	10	2	2	17	—	17	—	p	—	1	1	—
Owenia fusiformis	p	c	6	95	4	114	3	26	43	10	p	c	42	12	56
Myriochele heeri	—	p	—	13	2	24	40	8	3	—	—	p	4	6	42
Ammotrypane aulogaster	p	—	—	—	2	—	—	—	—	—	—	—	—	2	2
Clymene affinis	—	—	2	—	2	—	—	—	—	—	—	—	—	—	—
C. robusta	—	—	—	3	8	—	3	—	7	—	—	—	—	—	—
Clymene sp.	p	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Nicomache lumbricalis	—	p	—	—	—	2	—	—	—	—	—	—	—	—	—
Praxillura longissima	—	p	—	—	—	—	—	—	—	—	—	—	—	—	—
Leiochone clypeata	—	—	—	—	4	—	—	—	—	—	—	—	—	—	—
Ampharete grubei	p	—	—	—	6	—	7	—	3	10	—	—	—	1	—
Amphicteis gunneri	—	p	2	20	10	2	10	8	7	—	p	—	9	—	15
Anobothrus gracilis	—	p	—	—	—	—	—	—	—	—	—	—	—	—	—
Sabellides octocirrata	—	—	—	—	2	—	—	4	—	—	—	—	—	—	—
Melinna cristata	—	p	—	—	—	—	—	2	—	—	p	—	—	—	—
M. palmata	—	—	—	3	—	—	—	—	—	—	—	—	—	—	—
Sabellaria spinulosa	—	p	4	—	—	—	—	—	—	—	—	—	—	—	—
Pectinaria auricoma	—	p	4	—	2	6	—	34	10	—	—	c	23	10	16
P. koreni	—	—	—	5	—	2	—	8	3	—	—	p	7	—	—
Amphitrite gracilis	p	—	—	—	—	—	—	—	—	—	—	—	—	—	1
Phisidia aurea	p	—	—	4	—	2	3	—	—	3	p	—	—	—	—
Pista cristata	—	p	—	20	—	2	—	—	7	—	p	—	—	—	—
Thelepus cincinnatus	—	—	—	3	6	—	—	—	—	—	—	—	—	2	2
Polycirrus denticulatus	p	—	—	5	—	—	—	—	—	—	—	—	1	—	—
P. plumosus	—	—	—	—	—	2	—	—	—	—	—	—	4	—	—
Amaea trilobata	—	—	—	—	—	—	—	—	—	—	p	—	—	—	—
Lysilla loveni	—	—	—	3	2	—	—	—	—	—	—	—	—	—	—
Trichobranchus glacialis	—	p	2	3	2	—	—	4	—	—	—	—	12	—	8
Terebellides stroemi	—	p	2	10	2	4	3	2	—	—	—	p	6	—	6
Terebellidae: unidentified	—	—	—	—	—	—	—	—	—	7	p	—	2	1	—
Sabella pavonina	—	—	—	—	20	—	—	12	—	—	p	—	—	—	—
Dasychone bombyx	—	—	—	—	—	—	3	—	—	—	—	—	—	—	—
Potamilla reniformis	p	—	—	—	10	—	—	—	—	—	—	—	—	—	—
Chone suspecta	p	—	—	—	2	—	—	—	—	—	—	—	—	—	—
Euchone rubrocincta	p	p	—	10	2	4	—	—	3	—	—	—	—	—	—
Myxicola infundibulum	—	—	—	—	—	—	—	2	3	—	—	—	—	—	—
Serpula vermicularis	—	—	—	—	—	—	—	2	—	—	—	—	—	—	—
Hydroides norvegica	p	—	—	15	22	2	3	2	13	20	p	p	—	—	1
Pomatoceros triqueter	p	—	4	—	—	—	—	—	—	—	p	—	—	—	—
Spirorbis spirillum	—	—	3	—	—	—	—	—	—	—	—	p	—	—	—

p = present c = common.

TABLE 5. POLYCHAET FAUNA OF FINE GRAVELS

(Expressed as numbers per square metre, or relative abundance.)

	Fine shell gravel					Fine stony gravel					Coralline gravel			
Station number ...	*71*	*20*	*21*	*26*	*27*	*75*	*10*	*11*	*39*	*34*	*1*	*5*	*12*	*30*
Depth (fathoms) ...	18	20	20	25	30	6	9	10	10	15	15	15	15	15
Dredge (D) or Grab (G)...	D	G	G	G	G	D	D	D	D	D	G	G	G	G
Number of hauls	1	3	3	5	3	1	1	1	1	1	4	5	5	1
Species														
Aphrodite aculeata	p	—	—	—	—	—	—	—	—	p	—	—	—	—
Malmgrenia castanea	—	—	—	2	—	—	—	—	—	—	—	—	2	—
Gattyana cirrosa	—	—	—	—	—	—	—	—	—	p	—	2	—	—
Lepidonotus squamatus	p	—	—	—	—	—	p	—	—	p	—	—	—	—
Harmothoë impar	p	17	7	—	—	—	—	—	—	—	—	—	—	—
H. antilopis	—	3	—	—	—	—	—	—	—	—	—	2	4	—
H. haliaeti	—	—	—	—	—	p	—	—	—	—	—	—	—	p
H. longisetis	—	—	—	—	—	p	p	—	—	—	—	—	—	—
H. lunulata	—	—	3	—	—	—	p	—	—	—	—	—	—	p
Harmothoë sp.	—	—	—	—	—	—	p	—	—	—	3	2	2	—
Halosydna gelatinosa	p	—	—	—	—	—	—	—	—	p	—	—	—	—
Lagisca extenuata	p	—	—	—	—	—	p	—	—	c	—	—	—	p
Scalisetosus pellucidus	—	—	—	—	—	—	—	—	—	c	—	—	—	—
Pholoë minuta	p	3	3	4	10	p	p	—	—	p	5	6	10	c
Pisione remota	—	—	—	—	—	—	p	p	—	—	—	—	2	—
Phyllodoce kosteriensis	—	—	—	—	—	—	—	—	—	p	—	—	—	—
Notophyllum foliosum	p	—	3	6	—	—	—	—	—	—	—	—	—	—
Eulalia viridis	—	—	—	4	—	—	—	—	—	—	—	—	—	p
E. bilineata	—	—	—	6	—	—	—	—	—	—	—	—	—	—
E. sanguinea	—	23	3	2	—	—	p	—	—	p	—	—	—	—
Eulalia sp.	—	—	—	—	3	—	—	p	—	—	—	—	—	—
Eteone foliosa	—	3	—	—	3	—	—	—	—	—	—	—	—	—
E. longa	—	—	—	—	—	—	—	—	p	—	—	—	—	—
Mystides limbata	—	—	7	—	—	—	p	—	—	—	—	—	—	—
Podarke pallida	—	—	—	—	—	—	—	—	—	p	—	—	—	p
Castalia punctata	—	7	63	10	—	—	—	—	—	p	—	—	—	p
Kefersteinia cirrata	—	—	—	—	—	—	p	—	—	p	—	—	—	p
Syllis armillaris	—	17	23	24	3	—	p	—	—	—	—	—	2	—
S. cornuta	—	7	—	4	—	—	—	—	—	—	—	2	2	—
Syllis sp.	—	—	—	6	—	—	—	—	—	—	—	—	—	—
Trypanosyllis coeliaca	—	3	—	6	—	p	—	—	—	—	—	—	—	—
Odontosyllis fulgurans	—	—	—	—	—	—	p	—	—	c	—	6	—	—
Eusyllis blomstrandi	p	13	—	—	—	—	—	—	—	—	—	—	—	p
Eurysyllis tuberculata	—	13	3	—	—	—	—	—	—	—	—	—	—	—
Exogone gemmifera	—	3	3	—	—	—	—	—	—	—	—	—	—	—
Sphaerosyllis hystrix	—	—	3	—	3	—	p	p	—	—	—	—	—	—
S. bulbosa	—	—	—	2	—	—	p	—	—	—	—	—	—	—
Autolytus rubropunctatus	—	—	3	—	—	—	—	—	—	—	—	—	—	—
A. prolifer	—	3	—	2	3	—	—	—	—	—	—	—	—	—
A. aurantiacus	—	—	—	—	—	—	—	—	—	—	—	8	—	—
Nereis zonata	—	7	—	—	—	—	—	—	—	—	—	—	—	—
N. pelagica	p	—	—	—	—	—	—	—	—	—	—	—	—	—
Platynereis dumerilii	p	—	—	—	—	—	—	—	—	—	—	—	—	—
Nephthys incisa	p	—	—	—	—	—	—	—	—	p	—	4	2	—
N. rubella	—	—	—	—	—	—	—	—	—	—	—	2	—	—
Ephesia gracilis	—	3	—	—	—	—	—	—	—	p	3	2	—	c
E. peripatus	—	—	3	—	—	p	p	—	—	—	—	—	2	p
Glycera lapidum	—	20	7	18	27	a	a	a	a	p	10	32	34	a
G. capitata	p	—	—	—	—	—	—	—	—	—	—	—	—	—
G. rouxi	—	—	—	—	3	p	—	—	—	p	3	2	6	p
G. gigantea	—	—	—	4	—	—	—	—	—	—	—	2	—	p
G. convoluta	—	—	—	—	—	—	—	—	—	c	—	—	—	—
Goniada maculata	—	—	—	—	3	—	—	—	—	—	—	2	—	p
Eone nordmanni	—	—	3	4	—	—	—	—	—	c	—	4	2	—

TABLE 5 (*continued*)

Station number	... *71*	*20*	*21*	*26*	*27*	*75*	*10*	*11*	*39*	*34*	*1*	*5*	*12*	*30*
Eunice harassi	p	—	—	2	—	—	—	—	—	—	—	—	—	—
Onuphis conchylega	p	—	—	—	—	—	—	—	—	—	—	—	—	—
Nematonereis unicornis	—	10	20	14	10	—	p	—	—	p	35	18	10	p
Lumbriconereis gracilis	—	10	—	4	13	p	p	—	—	c	35	96	40	c
L. fragilis	—	—	—	2	—	p	p	—	—	—	—	2	2	c
L. hibernica	—	—	—	—	3	—	—	—	—	p	—	—	—	—
Drilonereis filum	—	—	—	—	—	—	—	—	—	—	—	—	2	—
Staurocephalus neglectus	—	—	—	—	—	p	p	p	—	—	—	—	—	—
Aricia cuvieri	—	3	—	—	—	—	—	—	—	—	—	—	4	—
Laonice cirrata	p	7	7	34	17	p	c	—	p	p	13	10	22	c
Aonides paucibranchiata	—	30	3	42	7	c	c	c	c	—	—	—	2	p
Spiophanes bombyx	—	—	—	—	—	—	—	—	p	p	—	—	—	—
Polydora ciliata	—	—	7	—	—	—	—	—	—	—	—	—	—	—
P. flava	—	3	—	2	—	—	—	—	—	—	—	—	—	—
P. caulleryi	—	—	—	2	—	—	p	—	—	—	—	—	—	—
Aricidea jeffreysi	—	—	—	4	—	—	—	—	—	—	3	—	—	—
A. branchiata	—	—	—	—	—	—	—	—	—	—	—	—	2	—
Paraonis lyra	—	—	—	2	—	—	—	—	—	—	—	—	6	—
Heterocirrus zetlandicus	—	—	26	4	—	—	—	—	—	c	—	4	—	—
H. caput-esocis	—	—	3	4	—	—	—	—	—	—	—	—	—	—
H. bioculatus	—	—	—	—	—	—	—	—	—	—	2	—	—	—
Tharyx marioni	—	—	3	2	3	—	—	—	—	p	—	—	—	—
Dodecaceria concharum	—	—	20	—	—	—	—	—	—	—	—	—	—	—
Macrochaeta clavicornis	—	3	—	—	—	—	p	—	—	—	—	—	10	p
Stylarioides plumosa	—	—	—	2	3	—	—	—	—	—	—	—	—	—
Diplocirrus glaucus	—	—	—	—	—	—	—	—	—	—	3	—	—	—
Flabelligera affinis	—	—	—	—	—	—	—	—	—	—	—	—	—	p
Scalibregma inflatum	—	—	—	—	—	—	—	—	—	p	—	2	2	p
Notomastus latericeus	—	—	—	—	—	p	p	p	—	—	—	2	—	p
Capitomastus minimus	—	3	—	—	—	c	a	c	—	a	40	48	50	—
Maldane sarsi	—	—	7	—	—	—	—	—	—	—	—	—	—	—
Clymene affinis	—	—	—	—	6	—	p	—	—	c	—	4	—	—
Leiochone clypeata	—	—	—	—	—	p	p	—	—	—	—	—	—	—
Nicomache trispinata	—	—	—	—	—	—	—	—	—	p	—	—	—	—
Maldanidae: unidentified	—	3	—	—	—	—	—	—	—	p	—	—	—	—
Owenia fusiformis	p	—	3	6	3	—	—	—	—	a	—	2	—	—
Myriochele heeri	—	—	—	—	—	—	—	—	—	p	—	—	—	—
Pectinaria auricoma	—	—	—	—	—	—	—	—	—	p	3	2	—	—
P. koreni	—	—	—	—	—	—	—	—	—	—	3	—	—	—
Sabellaria spinulosa	p	—	—	2	3	—	—	—	—	—	—	—	—	—
Ampharete grubei	p	—	—	—	3	—	—	—	—	p	—	—	—	—
Anobothrus gracilis	—	—	—	—	—	—	—	—	—	p	—	—	—	—
Amphicteis gunneri	p	—	—	—	—	—	—	—	—	—	—	—	2	p
Melinna palmata	—	—	—	—	—	—	—	—	—	—	8	—	—	—
M. cristata	—	—	—	—	—	—	—	—	—	—	—	—	—	p
Phisidia aurea	—	—	3	—	—	—	—	—	—	—	—	—	—	—
Pista cristata	—	—	—	2	—	a	a	c	a	p	3	10	22	c
Polymnia nebulosa	p	—	—	—	—	—	—	—	—	—	—	—	—	—
Nicolea zostericola	—	3	—	—	—	—	—	—	—	—	—	—	—	—
Thelepus cincinnatus	—	—	—	12	—	—	—	—	—	—	—	—	—	p
Polycirrus denticulatus	—	13	10	2	10	p	p	—	—	p	—	2	4	p
Trichobranchus glacialis	p	3	—	—	—	—	p	—	—	p	—	2	2	—
Terebellides stroemi	—	—	—	—	—	—	—	—	—	p	3	10	—	p
Lysilla loveni	—	3	—	—	—	—	—	—	—	—	—	—	—	—
Potamilla reniformis	—	—	27	8	3	—	—	—	—	p	—	—	—	—
Fabricia sabella	—	—	—	—	3	—	—	—	—	—	—	—	—	—
Jasminiera caudata	—	—	—	2	—	—	—	—	—	—	—	—	—	—
Chone suspecta	—	7	3	38	—	p	p	—	—	—	3	—	2	p
Euchone rubrocincta	—	—	—	—	3	—	—	—	—	—	—	—	2	—
Hydroides norvegica	—	17	57	26	3	—	—	—	—	p	—	—	—	p
Pomatoceros triqueter	—	30	3	38	—	—	p	—	—	a	—	—	—	—
Spirorbis spirillum	—	170	33	—	—	—	—	—	—	—	—	—	—	—

p = present c = common a = abundant.

TABLE 6. POLYCHAET FAUNA OF COARSE GRAVELS

		Shell gravel										Stones		
Station number	...	*67*	*40*	*47*	*48*	*53*	*54*	*52*	*46*	*69*	*72*	*74*	*32*	*50*
Depth (fathoms)	...	10	16	20	21	21	21	24	24	25	27	10	10	25
Species														
Hermione hystrix		p	—	—	—	—	—	—	—	—	—	—	—	—
Gattyana cirrosa		—	—	—	—	—	—	p	—	—	—	—	p	—
Lepidonotus squamatus		p	—	—	—	—	—	—	—	—	—	p	—	a
Harmothoë impar		—	—	—	—	—	—	—	—	—	p	—	a	—
H. haliaeti		—	—	—	—	—	—	—	—	—	—	—	p	—
H. reticulata		—	—	—	—	—	—	—	—	—	—	—	—	p
Halosydna gelatinosa		c	—	—	—	—	—	—	—	—	—	p	—	—
Lagisca extenuata		—	—	—	—	—	—	p	—	—	—	—	—	p
Polynoë scolopendrina		p	—	—	—	—	—	—	—	—	—	—	—	—
Scalisetosus assimilis		p	—	—	—	—	—	—	—	—	—	—	—	—
S. pellucidus		—	—	—	—	—	—	—	—	—	—	—	a	—
Pholoë minuta		—	—	—	—	—	—	—	—	—	—	—	—	p
Phyllodoce laminosa		—	—	—	—	—	—	—	—	—	p	—	—	—
Eulalia viridis		—	—	—	—	—	—	—	—	—	—	—	—	p
E. fucescens		—	—	—	—	—	—	—	—	—	—	—	p	p
E. macroceros		—	—	—	—	—	—	—	—	—	—	—	—	p
Castalia punctata		—	—	—	—	—	—	—	—	—	—	—	c	p
Kefersteinia cirrata		—	—	—	—	—	—	—	—	—	—	p	—	p
Syllis armillaris		p	—	—	—	—	—	—	—	—	p	—	—	a
S. variegata		—	—	—	—	—	—	—	—	—	—	—	—	p
Trypanosyllis coeliaca		—	—	—	—	—	—	—	—	—	—	—	p	—
Eusyllis blomstrandi		—	—	—	—	—	—	—	—	—	—	—	—	p
Exogone gemmifera		—	—	—	—	—	—	—	—	—	p	—	—	—
Autolytus pictus		—	—	—	—	—	—	—	—	—	—	—	—	c
A. rubropunctatus		—	—	—	—	—	—	—	—	—	—	—	—	p
A. longeferiens		—	—	—	—	—	—	—	—	—	—	—	—	p
A. aurantiacus		—	—	—	—	—	—	—	—	—	—	—	—	a
Autolytus sp.		—	—	—	—	—	—	—	—	—	p	—	—	p
Myrianida pinnigera		p	—	—	—	—	—	—	—	—	—	—	—	—
Nereis pelagica		—	—	—	—	—	—	—	—	—	—	—	—	p
Platynereis dumerilii		p	—	—	—	—	—	—	—	—	—	—	p	—
Nephthys incisa		—	—	—	—	—	—	—	—	—	—	—	p	—
Ephesia gracilis		—	—	—	—	—	—	—	—	—	—	—	p	—
Glycera lapidum		p	—	—	—	—	—	—	—	—	—	—	p	—
Goniada maculata		—	—	—	—	—	—	—	—	—	—	—	p	—
Eone nordmanni		—	—	—	—	—	—	—	—	—	—	—	p	—
Lumbriconereis fragilis		p	—	—	—	—	—	—	—	—	—	—	—	—
Polydora caeca		—	—	—	—	—	—	—	—	—	—	—	p	c
Chaetopterus variopedatus		—	—	—	—	—	—	p	p	—	—	—	—	—
Heterocirrus zetlandicus		—	—	—	—	—	—	—	—	—	—	—	p	—
Flabelligera affinis		—	—	—	—	—	—	—	—	—	c	—	p	—
Clymene robusta		—	—	—	—	—	—	—	—	—	—	—	p	—
Owenia fusiformis		—	—	—	—	—	—	—	—	—	—	—	c	—
Petta pusilla		—	—	—	—	p	—	—	—	—	—	—	—	—
Pectinaria auricoma		p	—	—	—	—	—	—	—	—	—	—	—	—
Sabellaria spinulosa		—	—	—	—	—	—	p	—	p	—	—	—	—
Polymnia nebulosa		p	—	—	—	—	—	p	c	—	—	c	—	—
Pista cristata		—	—	—	—	—	—	—	—	—	—	p	—	—
Polycirrus denticulatus		—	—	—	—	—	—	—	—	—	—	—	—	p
Potamilla reniformis		—	—	—	—	—	—	—	—	—	—	—	p	—
Dasychone bombyx		—	—	—	—	—	—	—	—	—	—	c	—	p
Sabellidae: unidentified		—	—	—	—	—	—	—	—	—	—	—	—	p
Serpula vermicularis		—	—	p	—	—	—	p	p	p	—	p	—	—
Hydroides norvegica		—	p	—	—	p	p	p	—	p	—	c	—	—
Pomatoceros triqueter		p	p	p	p	c	p	—	—	—	—	a	p	—
Protula tubularia		p	—	—	—	—	—	—	—	—	—	—	—	—
Filograna implexa		—	—	p	—	—	—	—	—	—	—	p	—	—
Spirorbis sp.		—	—	—	p	—	—	p	—	—	—	—	p	—

p = present c = common a = abundant.

TABLE 7. POLYCHAETA BORING OR INHABITING CREVICES IN EMPTY SHELLS OR SERPULID TUBES (RELATIVE ABUNDANCE)

Shell	...	*Ostrea*			*Modiolus*	*Glycimeris*		Serpulid tubes				
Station number	...	*40*	*54*	*54*	*52*	*53*	*46*	*68*	*34*	*48*	*46*	*69*
Depth (fathoms)	...	16	21	21	24	21	24	10	15	21	24	25
Species												
Pholoë minuta		—	p	—	—	—	—	—	p	—	—	—
Eulalia viridis		—	p	—	—	—	—	—	—	—	—	—
E. viridis var. *aurea*		—	—	—	—	—	—	—	—	—	p	—
E. bilineata		—	p	p	—	—	—	—	—	—	—	—
E. sanguinea		—	—	—	—	—	—	—	p	—	—	—
E. fucescens		—	—	p	—	—	—	—	—	—	—	—
E. pusilla		p	—	p	—	—	—	—	—	—	—	—
E. macroceros		p	—	—	—	—	—	—	—	—	—	—
Notophyllum foliosum		—	p	—	—	—	p	—	—	p	—	—
Castalia punctata		—	p	—	—	—	—	—	—	—	—	—
Syllis armillaris		—	c	c	—	—	—	p	—	—	—	p
S. amica		—	—	—	—	—	—	p	—	—	—	—
S. variegata		—	p	p	—	—	—	p	—	—	—	—
Trypanosyllis coeliaca		p	—	—	—	—	—	—	—	—	—	—
Odontosyllis fulgurans		—	—	—	—	—	—	—	p	—	—	—
Eusyllis blomstrandi		—	p	p	—	—	—	p	—	—	—	—
Exogone gemmifera		—	p	—	—	p	—	—	—	—	—	—
Autolytus rubropunctatus		—	p	p	—	—	—	p	—	—	—	—
A. longeferiens		—	p	—	—	—	—	—	—	—	—	—
A. aurantiacus		—	c	p	—	—	—	p	—	—	—	—
Nereis zonata		—	p	—	—	—	—	—	—	—	—	—
Nematonereis unicornis		p	p	—	p	p	p	—	—	—	—	—
Polydora ciliata		—	—	—	—	—	—	p	—	—	—	—
P. caeca		—	p	p	—	—	p	—	—	c	—	—
P. flava		—	—	p	—	—	—	—	c	—	—	—
P. giardi		—	—	—	p	—	—	—	—	—	—	—
Heterocirrus zetlandicus		—	p	p	—	—	—	—	p	—	—	—
Dodecaceria concharum		—	—	—	—	—	—	p	—	—	—	p
Lumbriclymene minor		—	—	c	—	—	c	—	—	—	—	—
Polycirrus denticulatus		p	p	p	—	—	—	—	—	—	—	—
Potamilla torelli		—	—	—	—	—	—	p	—	—	—	—
P. reniformis		—	p	c	—	p	p	—	—	—	—	p

p = present c = common.

TABLE 8. POLYCHAET FAUNA OF HYDROIDS

(Relative abundance.)

Station number	...	*47*	*48*	*49*	*53*	*52*	*46*
Depth (fathoms)	...	20	21	21	21	24	24
Species							
Lepidonotus squamatus		p	—	—	p	p	—
Harmothoë impar		—	—	—	p	p	—
Halosydna gelatinosa		—	—	—	p	—	—
Lagisca extenuata		—	—	p	—	p	p
Eulalia bilineata		p	—	—	p	—	p
E. fucescens		—	—	—	p	—	—
E. pusilla		—	—	—	p	—	—
Notophyllum foliosum		—	—	—	—	—	p
Mystides limbata		—	—	—	—	—	p
Castalia punctata		p	—	—	p	p	p
Syllis armillaris		a	p	p	a	—	p
S. variegata		p	p	—	—	—	—

TABLE 8 (*continued*)

Station number	... 47	48	49	53	52	46
Eusyllis blomstrandi	p	c	c	c	c	a
Trypanosyllis zebra	—	—	—	p	—	—
Exogone gemmifera	—	—	—	c	p	p
Autolytus pictus	—	—	—	p	—	—
A. rubropunctatus	p	—	—	p	—	—
A. aurantiacus	p	c	—	p	c	—
A. longeferiens	—	a	—	p	a	c
A. prolifer	—	—	—	—	p	—
Autolytus sp.	—	—	—	p	—	—
Procerastea perrieri	—	—	—	—	p	—
Nereis pelagica	—	—	—	p	p	—
N. zonata	—	—	—	p	—	—
Ephesia peripatus	p	—	—	—	p	—
Glycera lapidum	—	—	—	—	p	—
Lumbriconereis fragilis	—	p	—	—	—	—
Polydora caeca	—	—	—	p	—	—
Melinna cristata	—	—	—	—	p	—
Pista maculata	—	—	—	—	p	—
Nicolea zostericola	—	—	—	—	—	p
Polymnia nebulosa	—	—	—	—	p	—
Polycirrus denticulatus	—	—	p	p	p	p
Trichobranchus glacialis	—	p	—	—	—	—
Hydroides norvegica	—	p	—	—	c	c
Spirorbis spirillum	—	a	—	—	a	c

a = abundant c = common p = present.

TABLE 9. POLYCHAET FAUNA OF CLEAN SAND

(Number per square metre or relative abundance.)

Station number ...	65	59	31
Depth (fathoms) ...	2–5	3–4	10
Dredge or grab ...	D	G	D
Number of samples ...	1	5	1
Species			
Harmothoë imbricata	p	—	—
Sthenelais limicola	c	—	—
Eteone foliosa	—	2	—
E. longa	—	4	—
Mystides limbata	—	2	—
Kefersteinia cirrata	p	—	—
Exogone verugera	—	4	—
Nereis pelagica	p	—	—
Platynereis dumerilii	p	—	—
Nephthys cirrosa	p	—	p
Glycera convoluta	—	6	—
G. gigantea	—	2	—
G. rouxi	—	2	—
Goniada maculata	—	2	—
Eone nordmanni	—	2	—
Nematonereis unicornis	—	2	—
Scoloplos armiger	—	58	p
Spiophanes bombyx	—	6	—
Polydora caulleryi	—	2	—
Magelona papillicornis	—	2	—
Chaetozone setosa	—	10	—
Heterocirrus zetlandicus	—	—	p
Capitella capitata	—	8	—
Clymene oerstedii	—	10	—
Owenia fusiformis	—	2	—
Pista cristata	c	2	—
Polycirrus denticulatus	p	—	—

c = common p = present.

TABLE 10. COMPOSITION OF THE MACROFAUNA OF VARIOUS DEPOSITS

Habitat	Percentage of total population per station					Polychaeta				
						No. of specimens per m²		No. of species per station		
	Polychaeta Mean	Crustacea Mean	Mollusca Mean	Echinodermata Mean	Others Mean	Range	Mean	Range	Mean	Total species
Mud	62	15·3	9·7	4·3	8·7	26–109	56	4–12	7·9	27
Muddy sand (no shell)	43·6	7·3	31·5	6·5	11·1	66–574	174	8–31	19·3	64
Muddy sand (with shell)	43·3	15·5	13	11·9	16·3	95–368	221	14–50	31·6	122
Fine shell gravel	64	5·2	9·2	11·4	10·2	150–466	342	21–39	29	85
Fine stony gravel	49	17·7	7·7	16	9·6	—	—	6–45	24	66
Coralline gravel	58	8·4	7	22·1	4·5	180–292	244	18–31	27	58
Coarse shell gravel	—	—	—	—	—	—	—	2–13	—	27
Large stones	—	—	—	—	—	—	—	10–24	18	41
Clean sand	60	21·5	17·5	1	—	120	—	3–19	—	27
Boring in shells	—	—	—	—	—	—	—	1–19	6·4	32
Sponges	—	—	—	—	—	—	—	6	—	6
Hydroids	—	—	—	—	—	—	—	4–20	11·5	37

TABLE 11. STATION LIST

No.	Date	Position	Depth (fm.)	Bottom deposit	Gear used	No. of hauls
1	16. ii. 53	1½ miles W. of Niarbyl	15	c.gr. & m.s.	V-V.G.	5
2	16. ii. 53	4 miles W. of Niarbyl	20	m.s. & sh.gr.	V-V.G.	5
3	16. ii. 53	5 miles W. of Niarbyl	25	m.s. & sh.gr.	V-V.G.	5
4	16. ii. 53	5½ miles W. of Niarbyl	30	m.s.	V-V.G.	5
5	9. iii. 53	1½ miles W. of Niarbyl	15	c.gr. & m.s.	V-V.G.	5
6	9. iii. 53	6½ miles W. of Niarbyl	35	m.s.	V-V.G.	5
7	9. iii. 53	7 miles W. of Niarbyl	40	m.	V-V.G.	5
8	9. iii. 53	8½ miles W. of Niarbyl	45	m.	V-V.G.	5
9	9. iii. 53	10½ miles W. of Niarbyl	50	m.	V-V.G.	5
10	20. iv. 53	½ mile N. of Fleshwick Bay	9	f.st.gr.	S.N.D.	1
11	20. iv. 53	Fleshwick Bay	10	f.st.gr.	S.N.D.	1
12	18. iv. 53	1½ miles S. 80° W. of Niarbyl	15	c.gr. & m.s.	V-V.G.	5
13	18. iv. 53	4 miles S. 80° W. of Niarbyl	20	m.s. & sh.gr.	V-V.G.	5
14	18. iv. 53	5½ miles S. 80° W. of Niarbyl	30	m.s. & sh.gr.	V-V.G.	5
15	18. iv. 53	9 miles S. 80° W. of Niarbyl	40	m.	V-V.G.	5
16	18. iv. 53	10 miles S. 80° W. of Niarbyl	45	m.	V-V.G.	5
17	27. viii. 53	12 miles S. 80° W. of Peel	50	m.	V-V.G.	5
18	27. viii. 53	13 miles N.W. of the Sound	55	m.	V-V.G.	5
19	27. viii. 53	6 miles N. 55° W. of the Sound	30	m.s.	V-V.G.	5
20	14. x. 53	3 miles W. of Bradda Head	20	sh.s. & sh.gr.	V-V.G.	3
21	14. x. 53	4½ miles W. of Sloc	20	sh.s. & sh.gr.	V-V.G.	3
22	14. x. 53	4 miles W. of Niarbyl	20	m.s. & sh.gr.	V-V.G.	4
23	14. x. 53	5 miles W. of Niarbyl	25	m.s. & sh.gr.	V-V.G.	5
24	14. x. 53	5½ miles W. of Niarbyl	30	m.s.	V-V.G.	5
25	14. x. 53	5½ miles W. of Sloc	25	m.s. & sh.gr.	V-V.G.	5
26	15. x. 53	5 miles W. of Bradda Head	25	sh.s. & sh.gr.	V-V.G.	5
27	15. x. 53	6 miles W. of Bradda Head	30	sh.s. & sh.gr.	V-.VG.	3
28	15. x. 53	9 miles W. of Bradda Head	29	m.s. & sh.gr.	V-V.G.	3
29	15. x. 53	10 miles W. of Bradda Head	40	m.s. & *Turr*.sh.	V-V.G.	3
30	24. xi. 53	1½ miles W. of Niarbyl	15	c.gr. & m.s.	S.N.D.	1
31	24. xi. 53	½ mile W. of Niarbyl	10	s.	S.N.D.	1
32	24. xi. 53	½ mile S.S.W. of Niarbyl	10	coarse st.gr.	S.N.D.	1
33	9. ii. 54	1 mile W. of Bradda Head	17	m.s. & sh.gr.	S.N.D.	1
34	9. ii. 54	2 miles W. of Sloc	15	large stones, f.st.gr. & m.s.	S.N.D.	1
35	9. ii. 54	3 miles W. of Sloc	18	m.s. & sh.gr.	S.N.D.	1
36	9. ii. 54	9½ miles W. of Sloc	40	m.s. & *Turr*.sh.	V-V.G.	3
37	9. ii. 54	11 miles W. of Sloc	50	m.	V-V.G.	3
38	9. ii. 54	7 miles W. of Sloc	30	m.s. & sh.gr.	V-V.G.	3
39	11. iii. 54	Off P.E. breakwater	5	f.st.gr.	N.D.	1
40	11. iii. 54	¼ mile W. of Charran	16	st.gr.	N.D.	1
41	1. iv. 54	8 miles S. 80° W. of Chicken R.	35	m.s. & *Turr*.sh.	V-V.G.	3
42	1. iv. 54	10 miles S. 80° W. of Chicken R.	38	m.	V-V.G.	3
43	1. iv. 54	12 miles S. 80° W. of Chicken R.	35	m.	V-V.G.	3
44	1. iv. 54	6 miles S. 80° W. of Chicken R.	34	m.s. & sh.gr.	S.N.D.	1
45	1. iv. 54	4 miles S. 80° W. of Chicken R.	32	m.s. & sh.gr.	S.N.D.	1
46	1. iv. 54	2 miles S. 80° W. of Chicken R.	24	shells & sh.gr.	4 ft. D.	1
47	19. iv. 54	1½ miles S. 10° W. of Scarlet P.	20	stones	4 ft. D.	1
48	19. iv. 54	3 miles S. 60° W. of Langness	21	shells & stones	4 ft. D.	1
49	19. iv. 54	2¾ miles S. 15° W. of P. St. M.	21	shells	4 ft. D.	1
50	19. iv. 54	1 mile S.E. of Chicken R.	25–30	stones	4 ft. D.	1
51	19. iv. 54	2 miles S. 22° W. of Chicken R.	24	sh.gr. & stones	4 ft. D.	1
52	19. iv. 54	2 miles N. 80° W. of Chicken R.	25	sh.gr. & shells	4 ft. D.	1
53	19. iv. 54	2¾ miles S. 80° W. of Bradda Head	21	shells	4 ft. D.	1
54	19. iv. 54	3½ miles S. 80° W. of Bradda Head	21–24	shells	4 ft. D.	1
55	26. iv. 54	11 miles N. 40° W. of the Sound	53	m.	V-V.G.	2
56	26. iv. 54	13 miles N. 40° W. of the Sound	58	m.	V-V.G.	2
57	26. iv. 54	14 miles N. 40° W. of the Sound	65	m.	V-V.G.	2
58	26. iv. 54	15 miles N. 40° W. of the Sound	70	m.	V-V.G.	2

TABLE 11 (*continued*)

No.	Date	Position	Depth (fm.)	Bottom deposit	Gear used	No. of hauls
59	26. iv. 54	Port Erin Bay	3–4	s. & f.st.gr.	V-V.G.	5
60	12. v. 54	6 miles N. 60° W. of the Sound	31	m.s. & sh.gr.	V-V.G.	3
61	12. v. 54	9 miles N. 60° W. of the Sound	41	m.s. & *Turr.*sh.	V-V.G.	3
62	12. v. 54	10½ miles N. 60° W. of the Sound	50	m.	V-V.G.	3
63	12. v. 54	15 miles N. 60° W. of the Sound	60	m.	V-V.G.	3
64	12. v. 54	7½ miles N.W. of the Sound	37	m.s.	V-V.G.	5
65	13. xi. 53	Port Erin Bay	2–3	s.	N.D.	2
66	20. i. 54	½ mile N. of the Sound	15	*Chlamys opercularis*	4 ft. D.	1
67	14. x. 52	¼ mile W. of Bradda Head	12	shells & sh.gr.	4 ft. D.	2
68	24. x. 52	Bay Fine	12	shells	4 ft. D.	1
69	5. xi. 52	5 miles S. of P. St. M.	27	*Modiolus* epif.	4 ft. D.	1
70	11. xi. 52	1 mile S. of Spanish Head	17	sh.gr. & m.s.	S.N.D.	1
71	11. xi. 52	1 mile N.N.W. of Bradda Head	18½	sh.gr. & m.s.	S.N.D.	1
72	11. xi. 52	2 miles S.W. of Chicken R.	26	shells & sh.gr.	S.N.D.	1
73	28. vii. 53	Bay Fine	15	*Chlamys opercularis*	4 ft. D.	1
74	6. x. 53	Off P. E. breakwater	10	rock	Trawl	
75	1. xii. 52	Fleshwick Bay	6	f.st.gr.	S.N.D.	1
76	30. ix. 52	7 miles N. 30° W. of the Sound	35	m.s.	V-V.G.	10
77	17. xi. 52	7 miles N. 30° W. of the Sound	35	m.s.	V-V.G.	10
78	23. xii. 52	7 miles N. 30° W. of the Sound	35	m.s.	V-V.G.	10

Abbreviations

Gear used: V-V.G., van Veen bottom sampler (1/10 m^2); N.D., naturalist's dredge (2 ft. 6 in.); S.N.D., small naturalist's dredge (1 ft. 6 in.); 4 ft. D., 4 ft. scallop dredge.

Bottom deposit or contents of haul: c.gr., coralline gravel; f.st.gr., fine stony gravel; m., mud; m.s., muddy sand; s., sand; sh.s., shell sand; sh.gr., shell gravel; *Turr.*sh., empty shells of *Turritella communis*.