Thus the group Fringillinæ has *six* subdivisions; Pyrrhulinæ has *six*; Meliphagidæ *nine*; Tetraonidæ *six*; Ardeadæ *six*, or including Grus (which is apparently omitted through inadvertence), *seven*; and Alcadæ has six.

I feel bound to state, that, notwithstanding these objections, the 'Classification of Birds' is an exceedingly useful manual of ornithology, and it must be regretted that the mass of original observations which it contains is intermixed with so much that is of a visionary nature.

Note.—The questions which are the subject of the above paper were discussed at much length in the Philosophical Magazine, in 1823 and 1825. The reader is referred to vol. lxii. p. 192, 255, 274; vol. lxv. p. 105, 183, 372, 428; vol. lxvi. p. 172: also to Phil. Mag. and Annals, New Series, 1830, vol. vii. p. 431; vol. viii. p. 52, 134, and 200.—Ed.

XXIV.—*Catalogue of the Land and Freshwater* Mollusca *of Ireland.* By Wm. Thompson, Vice-President of the Natural History Society of Belfast.

[Continued from p. 126.]

Class II. CONCHIFERA, Lam.

Fam. 1. Cycladæ.

Gen. 1. Cyclas, Lam.

1. *C. cornea*† Lam. Gray, Man. p. 280. pl. 1. f. 2; Turt. Man. p. 13. pl. 1. f. 2.
   C. rivalis, *Drap.* p. 129. pl. 10. f. 4, 5.
   Cardium corneum, *Mont.* p. 86.

Commonly distributed over the island, occurring in small ponds, &c., as well as lakes and rivers—the var. β. of Jenyns and other varieties not unfrequent. In summer I find the *C. cornea* of all sizes abundant in masses of *Confervæ*, floating on the surface of the water.

2. *Cyclas lacustris*, Turt. Gray, Man. p. 281. pl. 1. f. 3.
   C. calyculata, *Drap.* p. 130. pl. 10. f. 13, 14; Turt. Man. p. 14. f. 3.
   Cardium lacustre, *Mont.* p. 89.

Is rare and local in Ireland—occurs in the east and south. To Mr. R. Ball of Dublin, I am indebted for specimens which were taken by him many years ago in a pond at Tallaght, a few miles from the metropolis; he has also procured some at Youghal—in Mr. Hyndman's cabinet is a specimen from another locality in the south. By Mr. T. W. Warren of Dublin, this *Cyclas* has been obtained in a pond in the Phœnix Park, and in the Grand Canal near that city, and by Dr. Coulter in Lord Roden's demesne, Dundalk. Mr. Hincks has lately procured it near Cork. As the *C. lacustris* is local in En-

† Mr. Gray's observation on the local distribution of *Cyclas rivicola* (Man. p. 34.) induces me to mention that I have obtained it in the canals about Leamington, Warwickshire. I have not seen any specimens that could properly be authenticated as Irish.

gland likewise, the additional habitat of Stow Pool, Lichfield, may be given, where I procured it in July, 1836.

Gen. 2. Pisidium, Pfeiffer.

1. *P. obtusale*†, Pfeiffer? Jenyns, Monog. p. 13. pl. 20. f. 1—3; Gray, Man. p. 282. pl. 12. f. 149.

This, with the exception of *P. Henslowianum*, would seem to be the rarest of the *Pisidia* in Ireland. In two localities in the county of Down it has occurred to me—in a drain cut through clay soil in a brickfield near Bangor, and in a pond at Portavo, the seat of D. Ker, Esq. M.P. A single specimen has been taken at Finnoe (county Tipperary) by Edw. Waller, Esq.

2. *Pisidium nitidum*, Jenyns, Monog. p. 16. pl. 20. f. 7, 8; Gray, Man. p. 283. pl. 12. f. 150.

Is somewhat generally distributed in Ireland. It is abundant in a cold turfy deposit conveyed by a mountain stream to a pond at Wolfhill‡ near Belfast; and on the *Utricularia vulgaris* growing in stagnant pools, excavated in brick-making close to the town—these places are of a very different nature, the pond at the former being supplied with clear spring water, and at an elevation of nearly 600 feet above the sea, the latter but a few feet above it, and supplied only with rain water. In the west, I have obtained this species in Lough Gill, county Sligo. From about Portarlington it has been sent me by the Rev. B. J. Clarke, and from Finnoe by Edw. Waller, Esq.

3. *Pisidium pusillum*, Jenyns, Monog. p. 14. pl. 20. f. 4—6; Gray, Man. p. 283. pl. 1. f. 7.

Is the most common of the genus in Ireland, and universally distributed. It is generally to be met with in ponds, drains, &c.; but in marshy spots, both in this country and in Scotland, I have found it in company with, and adhering to, the same stones as land Mollusca which inhabit such places, as *Vertigo palustris*, &c. In the north and south of Ireland I have procured it among moss, which was kept moist only by the spray of the waterfall.

4. *Pisidium pulchellum*, Jenyns, Monog. p. 18. pl. 21. f. 1—5§; Gray, Man. p. 284. pl. 12. f. 151.

This handsome and well-marked species is generally distributed over the island. It inhabits stagnant and running water of the least as well as greatest extent, and at the same time and place may be found on various subaquatic plants, and buried in the mud—the largest and finest specimens I have procured were from the gently flowing river Main, near its junction with Lough Neagh.

† All the *Pisidia* about to be noticed, have been determined from comparison with English specimens favoured me by the Rev. L. Jenyns and Mr. Alder.

‡ A minute leech preys much on the *P. nitidum* and *P. pusillum*, which are found here in company.

§ All the varieties are found in Ireland—of var. δ, a single specimen has been obtained by the Rev. B. J. Clarke near Portarlington. Mr. Jenyns is now inclined to consider this a distinct species. See Gray, Man. p. 285.

5. *Pisidium Henslowianum*, Jenyns, Monog. p. 20. pl. 21. f. 6, 7; Gray, Man. p. 285. pl. 1. f. 6.

Cyclas appendiculata, *Turt. Man.* p. 15. f. 6.

The addition of this species to our fauna is due to Edw. Waller, Esq., who has favoured me with the inspection of a few specimens which he procured at Finnoe, county Tipperary.

6. *Pisidium amnicum*, Jenyns, Monog. p. 21. pl. 19. f. 2; Gray, Man. p. 285. pl. 1. f. 5.

Cyclas amnica, *Turt. Man.* p. 15. f. 5.

Cardium amnicum, *Mont.* p. 86.

Cyclas palustris, *Drap.* p. 131. pl. 10. f. 15, 16.

Although not very common, is widely distributed over the island, and is known to me as occurring in every portion except the extreme south. Capt. Brown noticed as localities—"in a stream near Clonooney; in the Grand Canal, and in the Liffey, plentiful," p. 508.—in this river it attains a very large size. In the river Main, near its junction with Lough Neagh; in the rejectamenta of this lake near Toome; and in that of the river Lagan near Belfast, I have found the *P. amnicum*. Ballitore (county Kildare), Limerick, and Miltown Malbay are noticed by Mr. W. H. Harvey as localities—from the river Barrow near Portarlington, the species has been sent me by the Rev. B. J. Clarke.

7. *Pisidium cinereum*, Alder, Supp. to Catal. in Newc. Trans.; Gray, Man. p. 286.

Is not common, but is widely distributed in Ireland, being found in the north, east, west, and south. In Sept. 1833, I first met with it in a moist spot in the wood at Holywood House, county Down, and have since obtained a very few specimens in different parts of this county, and of Antrim. Among *Pisidia* collected at Youngrove near Middleton (county Cork), by Miss M. Ball; at Killereran (county Galway) and Portarlington, by the Rev. B. J. Clarke; and in the neighbourhood of Dublin by T. W. Warren, Esq., is the *P. cinereum*.

Fam. 2. Unionidæ, Gray, Man.

Gen. 1. Anodon, Oken.

A. cygneus, Turton, Man. p. 17. f. 8; Gray, Man. p. 289. pl. 1. f. 8.

Anodonta cygnea and A. anatina, *Drap.* p. 133, 134. pl. 12. f. 1, 2.

Mytilus cygneus, *Mont.* p. 170.

The *Anodon* is known to me as found in suitable localities all over the island, except in the extreme south. The *Anodonta intermedia*, Pfeiffer, 1. 113. t. 6. f. 3, I have obtained in the rejectamenta of the Lagan Canal near Belfast. Specimens from the Grand Canal near Dublin, favoured me by Mr. R. Ball, are the *A. cygnea*, Pfeiffer, 1. 111. t. 6. f. 4; and Rossmassler, fig. 342; and in Mr. Hyndman's collection is a very fine specimen $3\frac{1}{4}$ inches long and $6\frac{3}{4}$ broad from

the Moyntaghs, county Armagh. From the Grand Canal also and the river Shannon I possess specimens of the *A. anatina*, Pfeiffer, 1. 112. t. 6. f. 2; and from this last locality likewise I have the *A. cellensis*, Pfeiffer, 1. 110. t. 6. f. 1, and Rossmassler, fig. 280.—of this last I have had the advantage of a comparison with English specimens kindly sent me by Mr. Alder, and named "*A. cellensis*, Pf." From the *Anodon*, varying so much, not only according to locality, but in the same waters, I cannot coincide with the authors who make so many species. The four forms here noticed, I venture with Mr. Gray to consider but one species—of the Irish specimens which I have critically compared, none exactly agree with the *A. ventricosa* or *A. ponderosa* of Pfeiffer. W. R. Wilde, Esq. of Dublin, informs me that *Anodons* are thrown up in quantities on the shores of Lough Schur, county Leitrim, where they are eaten by the peasantry —*Sliggaun* is the common name applied to the *Anodon* in the north of Ireland †.

Gen. 2. Alasmodon, Say.

A. margaritiferus, Gray, Man. p. 293. pl. 2. f. 9.

Unio margaritiferus, *Turt. Man.* p. 19. f. 9.

Unio margaritifera, *Drap.* p. 132. pl. 10. f. 17—19. and pl. 11. f. 5.

Mya margaritifera, *Mont.* p. 33.

This has for a long period been on record as an Irish shell; from papers published on the subject in the Philosophical Transactions, &c., Pennant drew the information which appears in his 'British Zoology.' It is indigenous to several of the northern counties, and to the south. By Capt. Brown it is noticed as found "in the river Slaney, Enniscorthy," p. 505. In the cabinet of Mr. Hyndman of Belfast, are specimens from the river Bann and from the county of Donegal. This species inhabits some of the tributary streams of Lough Neagh, and is plentiful in the neighbourhood of Omagh, county Tyrone, where I have been informed it was taken in such quantity in 1839, that the prisoners in the jail were employed in breaking the shells for manure. Mr. Humphreys of Cork, notes it as abundant at Inchigeela, and as inhabiting the small rivers which run through Blarney and Glanmire (county Cork)—at Curraghmore

† The following note on the species of *Anodon* and *Unio*, which in the course of a forenoon in July, 1836, I obtained alive in the river Avon near Leamington, Warwickshire, may not be out of place here.

Anodon. A fine series of specimens, from nine lines in length to full size, does not agree exactly with any species as represented by Pfeiffer (3 Parts) or Rossmassler (10 Parts)—according to the views of these authors they would constitute two or three species. They do not correspond with any of my Irish specimens.

Unio pictorum, identical with specimens from the neigbourhood of London, presented by Mr. Alder.

"*Unio tumidus*, Pfeiffer," agreeing with shells from Belgium, so named, which I owe to the kindness of M. Michaud.

"*Unio rostrata*, Lam. Mich.," according to examples from the north of France, sent me under this name with the last. The number of species (so called) in the genus *Unio* is surely, like that in *Anodon*, quite too great.

(county Waterford), it is stated by Mr. R. Ball to be found[1]. The form to which M. Michaud has applied the name of *Unio Roissyi* is common to several localities in Ireland.

The following Catalogue at the same time exhibits the number of British species which Ireland possesses, and according to the present state of our information, those likewise in which the country is deficient. In the Table, the columns headed "elsewhere in north," &c. are used only with reference to species *not* enumerated in the preceding column or columns, and to show that geographical position is not the cause of absence; thus, for instance, *Helix virgata* is not found about Belfast, but occurs in the north of the county of Antrim. The genera *Arion* and *Limax* were altogether omitted in most of the Catalogues supplied me. The Catalogue for Belfast[2] is on my own authority: Dublin, various; Limerick and Miltown Malbay, William Henry Harvey, Esq.; Cork, Mr. John Humphreys (1834) and the Rev. Thomas Hincks (1840)—the species added by the latter gentleman are marked thus †; Youghal (county Cork), Miss Mary Ball; La Bergerie near Portarlington (Queen's county), Rev. Benjamin J. Clarke; Finnoe near Burrisakane (Tipperary), Edward Waller, Esq.[3]

BRITISH ISLANDS.		IRELAND.	North.		East.		West.			South.			Central?	
			Belfast.	Elsewhere in North.	Dublin.	Elsewhere in East.	Limerick.	Miltown Malbay.	Elsewhere in West.	Cork.	Youghal.	Elsewhere in South.	La Bergerie.	Finnoe.
1	Neritina fluviatilis	1	...	...	*	...	*	...	...	*†	...	...	...	*
2	Assiminea Grayana													
3	Paludina vivipara	2	...	*										
4	—— achatina													
5	——tentaculata(P.impura)	3	*	...	*	...	*	...	...	*†	*	...	*	*
6	—— ventricosa													
7	Valvata piscinalis	4	*	...	*	...	*	...	...	*	...	...	*	*
8	—— cristata (V. spirorbis)	5	*	...	*	...	*	...	...	*†	...	...	*	*
9	Arion ater	6	*	...	*	...	*	...	...	...	*	...	*	
10	—— hortensis	7	*	...	...	...	...	...	...	...	...	...	*	
11	Limax maximus	8	*	...	*	...	*	...	...	...	*	...	*	
12	—— flavus (L. variegatus)	9	*	...	...	...	...	...	...	...	*	...	*	
13	—— carinatus	10	...	...	...	...	...	...	*	...	...	...	*	
14	—— agrestis	11	*	...	*	...	...	...	*	...	...	...	*	
15	—— brunneus													

[1] *Unio pictorum* is noticed by Dr. Turton, in his 'Catalogue of Irish Shells,' as found in "rivers about Cork." The species is not known as native to my correspondents in the south, and I am disposed to believe was erroneously inserted in the catalogue.

[2] All the species marked with an asterisk in the column headed "Belfast" have been obtained within four miles of the town.

[3] The prevailing geological features of the neighbourhood of Belfast are trap, chalk, greensand formation, variegated marl formation and grauwacke; of Dublin, mountain and calp limestone, granite and quartz-rock; of Limerick, Cork, and Youghal, "limestone and old red sandstone" (Griffith); of Miltown Malbay, "coal-shale and sandstone" (Griffith); of La Bergerie and Finnoe, mountain limestone.

BRITISH ISLANDS.		IRELAND.	North.		East.		West.			South.			Central ?	
			Belfast.	Elsewhere in North.	Dublin.	Elsewhere in East.	Limerick.	Miltown Malbay.	Elsewhere in West.	Cork.	Youghal.	Elsewhere in South.	La Bergerie.	Finnoe.
16	Vitrina pellucida.....	12	*	...	*	...	*	*	...	*	*	...	*	*
17	Testacella haliotidea	13	...	...	...	...	...	...	...	...	*			
18	Helix aperta													
19	—— aspersa	14	*	...	*	...	*	*	...	*	*	...	*	*
20	—— hortensis	15	...	*	*	...	...	...	...	*	...	...	*	
21	—— hybrida	16	...	*										
22	—— nemoralis	17	*	...	*	...	*	*	...	*	*	...	*	*
23	—— Pomatia													
24	—— arbustorum	18	*	...	*	...	...	...	...	...	...	*		
25	—— obvoluta													
26	—— lapicida													
27	—— pulchella	19	*	...	*	...	*	*	...	*	*	...	*	*
28	—— limbata													
29	—— Cantiana													
30	—— Carthusiana													
31	—— fusca	20	*	...	*	...	*	...	...	*†	*			
32	—— revelata													
33	—— fulva	21	*	...	*	...	...	*	...	*	...	...	*	*
34	—— aculeata	22	*	...	*	...	...	*	...	*†	...	...	*	*
35	—— lamellata (H. Scarburgensis, Bean.)...	23	*	...	...	*	...	...	*	*†	...	...	*	
36	—— granulata	24	...	...	...	...	*	...	...	*				
37	—— sericea	25	*											
38	—— hispida	26	*	...	*	...	*	*	...	*†	*	...	*	*
39	—— rufescens	27	...	*	*	...	*	*	...	*	*	...	*	*
40	—— concinna.....	28	*	...	*	...	...	...	*	...	*	...	*	*
41	—— virgata	29	...	*	*	...	...	...	*	*	*	...	*	
42	—— caperata.....	30	...	...	*	...	...	...	..	*	...	...	*	
43	—— Pisana.....	31	...	*										
44	—— ericetorum.....	32	...	*	*	...	*	*	...	*†	*	...	*	*
45	—— rotundata	33	*	...	*	...	*	*	...	*	*	...	*	*
46	—— umbilicata	34	...	...	*	...	*	...	...	*	*	...	*	*
47	—— pygmæa	35	*	...	...	*	...	*	...	...	...	...	*	*
48	—— cellaria	36	*	...	*	...	*	*	...	*	*	...	*	*
49	—— alliaria	37	*	...	*	...	...	...	*	*†	*	...	*	
50	—— pura	38	*	...	*	...	...	...	*	*†	...	...	*	
51	—— nitidula	39	*	...	*	...	*	...	...	*†	*	...	*	*
52	—— radiatula.....	40	*	...	*	...	...	...	*	*	...	...	*	
53	—— lucida	41	*	...	...	...	...	...	...	...	...	...	*	*
54	—— excavata.....	42	...	...	...	...	...	...	*	*†				
55	—— crystallina	43	*	...	*	...	*	...	...	*†	*	...	*	*
56	Succinea putris	44	*	...	*	...	*	*	...	*	*	...	*	*
57	—— Pfeifferi	45	*	...	...	*	*	...	...	*	...	...	*	*
58	—— oblonga													
59	Bulimus Lackamensis													
60	—— obscurus.....	46	...	*	*	...	...	...	...	...	...	...	*	
61	—— acutus.....	47	...	*	*	...	...	...	*	...	*	...	*	
62	—— lubricus	48	*	...	*	...	*	*	...	*	*	...	*	*
63	Azeca tridens													
64	Achatina acicula	49	...	...	*	...	*	*	...	...	*	...	*	*
65	Pupa umbilicata	50	*	...	*	...	*	*	...	*	*	...	*	*
66	—— Anglica	51	*	...	*	...	...	*	...	*†	*	...	*	
67	—— marginata	52	*	...	*	...	...	*	...	...	*	...	*	
68	—— juniperi													
69	Vertigo edentula.....	53	*	...	*	...	...	...	...	*†	...	...	...	*
70	—— cylindrica													
71	—— pygmæa	54	*	...	*	...	...	*	...	*†	*	...	*	*

BRITISH ISLANDS.		IRELAND.	North.		East.		West.			South.			Central ?	
			Belfast.	Elsewhere in North.	Dublin.	Elsewhere in East.	Limerick.	Miltown Malbay.	Elsewhere in West.	Cork.	Youghal.	Elsewhere in South.	La Bergerie.	Finnoe.
72	Vertigo alpestris													
73	—— substriata	55	*	...	*	...	*	*						
74	—— palustris	56	*	...	...	...	...	...	...	...	...	...	*	*
75	—— pusilla.....	57	*	...	*	...	...	*						
76	—— angustior	58	...	...	...	...	...	*						
77	Balæa perversa	59	*	...	*	...	*	...	...	*	*	...	*	*
78	Clausilia bidens	60	...	*										
79	—— biplicata													
80	—— Rolphii													
81	—— dubia													
82	—— nigricans	61	*	...	*	...	*	...	...	*	*	...	*	*
83	Carychium minimum	62	*	...	*	...	*	*	...	*†	*	...	*	*
84	Acme fusca	63	*	...	*	...	...	*	...	*†	...	...	*	*
85	Limnæus auricularius.....	64	...	...	*	...	*	*	...	...	*	...	*	
86	—— pereger	65	*	...	*	...	*	*	...	*	*	...	*	*
87	—— stagnalis.....	66	*	...	*	...	*	...	...	*	...	...	*	*
88	—— palustris	67	*	...	*	...	*	...	...	*†	*	...	*	*
89	—— truncatulus	68	*	...	*	...	*	...	...	*†	*	...	*	*
90	—— glaber.....	69	...	...	...	...	...	...	...	*				
91	—— involutus	70	...	...	...	...	...	...	...	...	...	*		
92	Amphipeplea glutinosa													
93	Ancylus fluviatilis	71	*	...	*	...	*	*	...	*	*	...	...	*
94	—— lacustris	72	*	...	*	...	*	...	...	...	...	...	...	*
95	Physa fontinalis	73	*	...	*	...	*	...	...	*	*	...	*	*
96	—— hypnorum	74	*	...	*	...	*	...	...	*	*	...	*	*
97	Planorbis corneus	75	...	...	...	*	...	...	...	...	...	...	*	
98	—— albus	76	*	...	*	...	*	...	...	*†	...	...	*	*
99	—— lævis	77	*	...										
100	—— imbricatus	78	*	...	*	...	*	...	...	...	...	...	*	*
101	—— carinatus	79	...	*	*	...	...	...	*	...	*	...	*	
102	—— umbilicatus (P. marginatus, Drap.) ...	80	*	...	*	...	*	*	...	*†	*	...	*	*
103	—— vortex.....	81	}											
104	—— spirorbis[1]	82	*	...	*	...	*	...	...	*	*	...	*	*
105	—— nitidus	83	*	...	*	...	*	...	...	*	...	...	*	*
106	—— contortus	84	*	...	*	...	*	...	...	*	...	...	*	*
107	Segmentina lineata													
108	Cyclostoma elegans	85 ?	...	...	*	...	...	...	...	...	*			
109	Cyclas rivicola													
110	—— cornea	86	*	...	*	...	*	*	...	*	*	...	*	*
111	—— calyculata	87	...	...	*	...	...	...	...	*†	*			
112	Pisidium obtusale	88												
113	—— nitidum	89	*	...	...	...	...	...	...	...	...	...	*	*
114	—— pusillum.....	90	*	...	*	...	...	...	*	*†	...	...	*	*
115	—— pulchellum	91	*	...	*	...	...	...	...	*†	...	...	*	*
116	—— Henslowianum	92												
117	—— amnicum	93	*	...	*	...	*	*	...	...	...	...	*	
118	—— cinereum	94	*	...	*	...	...	...	*	...	*	...	*	
119	Anodon cygneus	95	*	...	*	...	*							
120	Alasmodon elongatus.....	96	...	*	...	...	...	...	*	*				
121	Unio pictorum													
122	—— tumidus													
123	—— ovalis													
124	—— Batavus													

[1] For reasons stated in the text, p. 124, (No. XXV.) *P. vortex* and *P. spirorbis* are not marked separately in the catalogue.

Those acquainted with Mr. Gray's catalogue, will perceive that four of the species it contains are omitted,—the three *Conovuli* and *Dreissena polymorpha*, which is an introduced and not an indigenous species. Of the twenty-eight species which Great Britain and her islands would thus seem to possess over Ireland, it must be stated that Turton has enumerated four as Irish, viz. *Helix lapicida*, *H. Cantiana*, *Limneus glutinosus*, and *Unio pictorum*; but as he sometimes introduced species without sufficient reason, and as these are unknown to my correspondents and to myself, they are omitted—if correctly placed in our fauna by that author they will in all probability yet be found. *Paludina achatina* is included by Mr. Gray (Man. p. 34), but on what authority he could not recollect when I lately saw him at the British Museum. I have been told of the occurrence of a few species, which, in the absence of sufficient proof, are not included in the catalogue. Two of the Helices,—*H. aperta* and *H. revelata*,—have been introduced to the British list from Guernsey.

It appears from the foregoing catalogue, that four generic forms indigenous to England have not been found in Ireland, *Assiminea*, *Azeca*, *Segmentina*, and *Unio*; these comprise seven species, if four Unios be admitted as distinct.

It may be desirable to dwell for a moment on the distribution of those species in Great Britain which have not been found in Ireland. Of these, *Assiminea Grayana* is confined to the south-east of England, and is "seldom found out of the reach of brackish water." *Paludina achatina* and *P. ventricosa* are not generally distributed in England, and are unknown in Scotland*. *Limax brunneus* has been observed only at Newcastle and Berwick. *Helix aperta* (*H. naticoides*, Drap.) and *H. revelata* have not been found in Great Britain, but only in the island of Guernsey. *H. obvoluta* would seem to be confined to Hampshire, as *H. limbata* is to one quarter of the neighbourhood of London. *H. Pomatia* is found chiefly in the chalk districts of the south of England. *H. Cantiana* now occurs from the south to Newcastle-upon-Tyne, but is believed to have been introduced to this northern locality with ballast. *H. Carthusiana* (*H. Carthusianella*, Drap.), is confined to the south-east; *H. lapicida* prevails in the south, and along the eastern portion of England—not one of the above *Helices* is found in Scotland. *Succinea oblonga* has been obtained only in three localities, North Devon, and in the neighbourhood of Swansea and Glasgow. *Bulimus Lackamensis* is a south of England species—to Scotland it is unknown. *Azeca tridens* is widely distributed over England, and is also indigenous to the south of Scotland. *Pupa Juniperi* would appear to be chiefly confined to the south of England and South Wales. *Vertigo cylindrica* is very rare, and has been found but in three British localities—the neighbourhood of Bristol, of Edinburgh, and in the isle of Skye. *Vertigo alpestris* has been procured only in two stations—in Lanca-

* A manuscript catalogue of the land and freshwater mollusca of Scotland, favoured me by my friend Edward Forbes, Esq. is my authority.

shire and Northumberland. *Clausilia biplicata* is confined to the south of England; *C. Rolphii* to one or two localities in the south-east; *C. dubia* is, I believe, as yet known only to the north of England. *Limneus glutinosus*, *Cyclostoma elegans*, and *Cyclas rivicola*, are somewhat widely diffused in England, but are unknown to Scotland. *Segmentina lineata* is noticed by Mr. Gray as a south of England species, but is included in Mr. Forbes's list of Scottish mollusca. The genus *Unio*, as now restricted, becomes rare towards the north of England, and is not found in Scotland. The species of land and freshwater mollusca indigenous to Ireland, assimilate with those of Scotland much more nearly than those of England. About one-half of the species in which Ireland is deficient prevail chiefly in the portion of England which lies to the south of Ireland.

I should, perhaps, in conclusion, have ventured to offer some remarks on the causes which appear to influence the distribution of our Irish species, but the views put forward in my friend Mr. Forbes's excellent 'Report of the Distribution of Pulmoniferous Mollusca in the British Isles,' published in the volume for 1839 of the Report of the British Association for the Advancement of Science, renders unnecessary anything I could say upon the subject.

APPENDIX.

My notice of the genera *Arion* and *Limax* at the beginning of this article is so scanty, that I here avail myself of very full and interesting observations on the species appertaining to them, since favoured me by Mr. Clarke, who much more than any one in this country has bestowed attention on the subject.

Arion ater.

A. Empiricorum, Férus., t. 2.

La Bergerie, Queen's county; county Galway. Too abundant in both places, varying from the light yellow-coloured variety through all the shades of brown or ochre to deep black. The brown variety seems to predominate in Killereran (county Galway) meadows and woods, but I have repeatedly observed the two colours indiscriminately mixed together in precisely the same localities, both in fields and gardens. The yellow, which I have never taken of the full size, is mostly confined to the decaying pieces of wood found among damp moss. I have not noticed the variety with the scarlet foot, as in fig. 2. t. 2. Fér. I have seen two individuals busily engaged devouring a snail (*H. aspersa*), both their heads being introduced within the shell: the snail appeared to be fresh killed.

Arion hortensis.

A. des Jardin, Férus., t. 2. f. 4—6.

Var. α. f. 6. Fér.

Var. β. Pfeiffer.

La Bergerie and county Galway. By no means scarce. Férussac's figures agree accurately with mine, but are represented of larger dimensions than any I have seen. I have taken the young of a very minute size with the orange foot, and the colours equally as

deep as in adult individuals. Var. α. f. 6. Férus., is not more abundant here than the orange-footed one, which I have never succeeded in finding at Killereran, where the variety is common in violet beds. The following from Férussac agrees curiously with my habitat: "Elle se cache le jour sous les tiges de violettes de fraisiers et des autres plantes touffues." Mr. Alder remarks of the variety, "The variety only, if such it be, has yet been noticed in this country." I have never discovered even the rudiment of a shell in any of them.

N.B. I have before me at present an *Arion*, found along with *A. hortensis*, var. β. Pfeiff. The only character it possesses in common with it, is in the position of a yellow-coloured fascia running round the body, which is of a dusky brown, the sides greenish-yellow, the fascia becoming indistinct on the shield. It differs materially in colour from any variety of the *A. ater* I have met with; and what might characterize it as belonging to this species, is the shape and colour of the tentacles and head, the former being much more elongated than in *A. hortensis*, and of a shining black colour. The edge or side of the foot is likewise similar to *A. ater*, being greenish-yellow, marked with the peculiar transverse black lines. Its mucus is yellow-coloured, whereas that of *A. ater* is whitish, or colourless. Since writing the above, I have obtained a second specimen, similar in every respect to the former, except the fascia, which is not so distinct.

Limax maximus.

L. antiquorum, Férus., t. 4.

La Bergerie. Killereran and Monivea, county Galway. I have taken in each locality mentioned, one of the three varieties of Férussac, t. 4. Fig. 1. var β. (var. α. Drap.), among violets, Killereran; his figure is good, "sans tache distinctes," &c. Fig. 7. var. ν. Férus., is the La B. variety. Fig. 8. var. ζ. Férus., closely resembles specimens taken in Monivea churchyard, beautifully and distinctly spotted, the ground colour not so light as in Férussac's figure*.

Limax agrestis.

Limas agreste, Férus., t. 5. f. 7—8.

L. filans, Young, var. ν. Fér.

Queen's county, and county Galway. Common, of all shades and degrees of colour and markings, from the pale yellowish-white of *L. filans* to the darkest variety of reddish-brown. *L. filans* is equally abundant. Yesterday, July 21st, I had the gratification of seeing them repeatedly let themselves drop down to the table from the lid

* I have recently met with a very remarkable variety of this species in the Spire hill, Queen's county, and which I do not find described; it is as follows:—The entire animal of a deep shining black, with the exception of the keel and central band of the foot, which are white. A casual glance at this variety would scarcely suffice to recognise it; but the shape of the animal, the shell, and the keel, at once determine it as *L. maximus*. In one individual there were a few indistinct blotches of a lighter colour on the sides.

of a tin box, where, for the purpose of taking some drawings of the different varieties, they were held. A similar feat was performed by the full-grown and dark varieties, which were on the same box with *L. filans*, but they did not appear to possess the same facility, and were more reluctant in resorting to this expedient for escaping from the confined space on which they were placed. Turton, in his description of the shell of this species, makes no mention of the membranaceous margin. I have now eight specimens before me, taken from the animals this morning; the following is an attempt at their description: shell rather variable, in shape usually oblong oval, somewhat larger than those found in *L. Sowerbii*, but much thinner, and without the same abrupt thickening in the centre, with a membranaceous edge, all of them concave, as much so in proportion to size as in *L. parma*.

I have not been able to recognise the *Limax brunneus* of Drap., in either county, or elsewhere.

Limax variegatus ?

L. flavescens, var. *ν*. Fér., t. 5. f. 3. ?

La Bergerie; Monivea; county Galway. Common on beech and other trees in moist woods; they somewhat resemble in colour var. *ν*. f. 3. *L. flavescens*, Férus. All the Queen's county and Galway specimens have the yellowish dorsal streak, both in young and adults. I have not as yet found it in such a locality as is ascribed to it by Férussac: he observes, "Elle infeste les caves où elle se tient ordinairement contre les murailles." I have never taken it elsewhere than on the trunks of trees (particularly beech), in the crevices and under the moss. The remarkable transparency of this species does not appear to be noticed as a specific character. After rain, I have seen them in numbers gliding down the smooth bark of the beech from feeding on the higher foliage, their bodies appearing between the light like pellucid jelly, through which their internal organization can be indistinctly traced.

While these notes on the *Limacidæ* were passing through the press, I felt desirous of consulting M. Bouchard's memoir; and no sooner was this communicated to Mr. Gray (by Mr. Thompson), than he with great kindness forwarded his copy of it to Ireland for that purpose. I suspected that the *Limax*, here doubtfully introduced as "*L. flavescens*, var. *ν*. Fér.," might perhaps be referred to *L. arborum*, on account of its possessing certain characters and habits differing from what is contained in any description of *L. variegatus* and its varieties. I consequently have compared my specimens carefully with M. Bouchard's description of *L. arborum*, and was much gratified to find a perfect agreement in the specific distinctions, as well as in the peculiar habits of the animal. This *Limax* is so well marked as to leave no doubt on my mind of its identity with that species. I have recently obtained unquestionable specimens of *L. variegatus* in La Bergerie garden, which are referable to "*L. variegatus*, Fér., var. *α*. t. 5. f. 1. Luteus aut succineus." They are precisely similar to specimens taken by R. Ball, Esq., in a garden at Youghal, and now in his collection. In spirits the yellow colour disappears.

Limax carinatus.

Limax Sowerbii, Férus. ?

La Bergerie; Monivea; county Galway, under stones in fields, and in tufted plants in gardens. There is not any figure in Férussac to which I could refer the La B. varieties (if they are varieties). Nor does Mr. Gray's description agree well with them; the word "tesselated" does not accurately describe the distribution of their colours. Their head and tentacles are never "black," but always *gray*, or blueish-gray. The usual colour is yellowish-brown, often approaching to dusky, sides pale, gray *clouded* with light yellow, head and tentacles blueish-gray.

Variety. Deep dusky or nearly black, sides pale gray, head and tentacles blueish-gray.

The young have the keel yellow-coloured, which in adults is generally the same colour as the back. The extreme dark colour of the variety led me at first to confound it with the *L. gagates* of Férus. He remarks of one of the varieties of *L. gagates*, "Elle est d'un gris bluatre ou nouratre..... plus pale lateralement." I have seen but a single individual in Monivea; it was identical with the variety.

The internal shells are a size smaller than those of *L. agrestis*; they have no membrane on the edge, are opake, much thicker, and not concave; the peculiar thickening process in the centre gives them the appearance of having a marginal zone, or as if a smaller sized shell were placed on the top and centre of the larger, leaving a rather broad margin, which is usually of a rufous colour towards the top.

I find that this species is capable of forming a slimy thread in the same manner as *L. filans*. Having placed one on a laurel, I was surprised by seeing it forthwith make use of this means for conveying itself in safety to the ground. I have since succeeded in making other individuals act in a similar way. The spinning limaces may be easily forced to do so by leaving them on an evergreen or other tree which may not be congenial to their tastes, when they will speedily effect their escape in this manner.

[Mr. Clarke has favoured me with living specimens of this *Limax*, from La Bergerie, and judging from descriptions and figures, I should not hesitate to consider it *L. Sowerbii*. A species, similarly keeled from the shield to the tail, and of which a very few specimens were obtained near Clifden, Connemara, during a tour made to the west of Ireland, in July 1840, by Mr. R. Ball, Mr. E. Forbes, and myself, corresponds more nearly with the *L. gagates*, as described and figured by Draparnaud, than with the British descriptions of *L. Sowerbii*. They are from half an inch to an inch in length, the head, back and sides blackish, the foot pale gray; in one individual the dorsal keel was narrowly margined with yellow. They were all found under stones in wet places.—W. T.]

Note.—On looking over the Appendix to Mr. Gray's edition of Turton, I find he quotes M. Bouchard Chantreux, in observing, that "the young of *Arion ater* is dull brown, with yellowish sides."

The Arion described above may probably be only such; but the youngest specimens I have ever taken of *A. ater* (and I have obtained them very young), were entirely of a light yellow, or greenish-yellow colour, in one or two instances having very obscure and similarly placed dusky fasciæ on the shield only. M. Bouchard supposes the *L. flans* of Hoy to be the young of his *L. arboreus*; from my experience, I feel assured of its being the young of *L. agrestis*, as I have almost always found it under stones, generally accompanying the full-grown *L. agrestis*, and very rarely "on trees."

BENJAMIN J. CLARKE.

La Bergerie, Aug. 5, 1840.

Additional localities may here be given for the following species:

Helix lamellata (H. Scarburgensis). Wood near the bridge of Errif, county Mayo, between Westport and Killery harbour.—W. T.

Helix radiatula. With last.

Helix lucida, Drap. Near Clifden, Connemara.—W. T.

Helix virgata.

When the first part of the paper was printed, I was unable to give a western locality for this species, but specimens collected within a few miles of Roundstone, on the coast of Galway, have since been sent me by Mr. William McCalla, of that place.

Helix hybrida.

The examples of this *Helix*, before alluded to in the present paper (p. 22), differed only from the ordinary *H. nemoralis* in having the lip of a rose colour or brown, and in its being margined with a white line. By R. Leyland, Esq., of Halifax (Yorkshire), I have lately been favoured with a number of specimens of *H. hybrida*, which bear much the same relation to *H. hortensis* that the former do to *H. nemoralis*. They are all yellowish-brown, with the lip varying from a rose colour to white. Mr. Leyland remarks, in reference to them, "The situation in which this *Helix* is met with, is on the banks of the canal between Keighly and Bingley, and about two miles from each place. The extent to which it is confined is not more than thirty paces in length, beyond which only an occasional straggler could be met with, and even then at no great distance from the principal station. *H. hortensis* and *H. nemoralis* are both found in the same place as *H. hybrida*, but are common along the whole line of the canal so far as I have examined, while the last seems confined to the small space before-mentioned, and is there rather numerous. The vegetation of this spot consists of the common grasses, *Rubi*, a few of the most common *Umbelliferæ* and nettles; upon the last of these a majority of the specimens were found."

In the south islands of Arran, situated near the entrance to Galway bay, the few following species were, in June, 1834, obtained by Mr. R. Ball and myself: *Helix nemoralis* (extremely large), *H. cellaria*, *H. crystallina*, *H. umbilicata*, *H. ericetorum* (one pure white), *H. hispida*, Mull.; *Clausilia nigricans* (rugosa), one of crystalline transparency, as were nearly all of *Pupa umbilicata*, which is here abundant.