think this fact would have gone for much. We have independent physical evidence that the Crag was followed by a period of intense cold; and, knowing this, we are justified in looking upon the arctic character of the Crag fauna, which in itself would not have been much to lean upon, as a proof that the refrigeration began during the Crag period.

I have spoken very plainly, because the man who speaks plainly is most likely to make himself understood; but I will venture, though it is hardly necessary, to say that nothing could be further from my thoughts than to show any want of respect for the eminence and scientific attainments of Dr. Carpenter, whom it would be impertinence in me to praise.

II.—A CENSUS OF THE MARINE INVERTEBRATE FAUNA OF THE LIAS.

By RALPH TATE, Assoc. Lin. Soc., F.G.S., etc.

THE Marine Invertebrate Fauna of the Lias would, if one consulted Morris's Catalogue of British Fossils, published in 1854, be regarded as exceedingly poor, especially in certain classes, relative to the thickness of the rocks constituting that system. Thus, I count, eliminating synonyms, 130 species of Cephalopoda, 5 of Gasteropoda, 57 of Conchifera, 37 of Brachiopoda, 1 of Crustacea, 2 of Annelida, 21 of Echinodermata, and 2 of Zoantharia, and if to these we add the fish and other forms of life, we obtain a total of 426 species of plants and animals. But during the lapse of 16 years, this number has been nearly tripled, and to those classes, which were either unrepresented or characterized by a paucity of species, great accessions have been made. Notably, the number of Gasteropoda has risen from 5 to 269; the Conchifera from 57 to 297, the Brachiopoda have been augmented by the addition of 39 species, the Corals now number 67, and the Polyzoa and Sponges, previously unrepresented, now have a place in the list.

In the last decade the following monographs have appeared in the publications of the Palæontographical Society:—The Liassic Starfishes, by Dr. Wright; the Liassic Belemnitidæ, by Professor Phillips; and the Liassic Corals, by Professor Dr. Duncan. These bring up our information on the classes treated of to a satisfactory and determinate position; and Memoirs by Mr. Day, Dr. Lycett, Dr. Oppel, Mr. C. Moore, Mr. H. Woodward, Dr. Wright, and myself, have contributed also largely to our knowledge of the Liassic Invertebrate Fauna of this country. These materials have formed the basis on which I have taken the census, so to speak, of the British Liassic population; but the labour has been more than merely docketing the published names of species, quoted for the System, as the claims of each new species have, to the best of my ability, been investigated, and the names have been rejected or accepted accordingly. The exercise of this caution I have found

necessary, chiefly because, from the great number of separate palæontological memoirs extant, estimated at upwards of 130, authors are liable, from inadvertency, to describe as new what may have already been figured. The variability of certain species is also a fruitful source of multiplication of specific names; and the synonyms of certain species, whose limits are ill-defined, are most voluminous; such are *Cardinia ovalis* and others, *Pecten dextilis*, *Rhynchonella variabilis*, *Spiriferina rostrata*, etc., etc.

My own labours have been more especially directed to the Mollusca, but much remains to be done before an approximate estimate of the number of species belonging to this sub-kingdom can be given. Several species not included in my census have been described, the claims of which to a place in a catalogue can only be determined by an examination of the type specimens. The determination of such dubious species will necessitate a visit to several public museums. Thus, the Whitby Museum contains the types of 130 Cephalopoda, and 122 species of other classes of Mollusca, the names of which have not been generally accepted. Indeed, with the exception of the Cephalopoda, very little is known respecting the species of the Yorkshire Lias, and till we know more of them and of their distribution, the sub-divisions of the Liassic rocks of Yorkshire cannot be brought, with any degree of confidence, into juxtaposition with those of the more typical district of the south-west of England.

Distribution of the Genera.—In the accompanying table are given the names of all the genera known in the Lias, and the numbers in the first column refer to the number of species of the genus in the British Lias, whilst those in the second column indicate the total number of species, British and Continental.

The Rhætic species are excluded from these enumerations, as we are in possession of full information respecting them¹; but the species from the Supra-Liassic Sands are included.

The total number of marine invertebrate species in the European Lias is 2,126; of these 997, or nearly one-half, are found in Great Britain. Singularly enough, this proportion holds good for the majority of the classes (see Summary, Table II.).

If to the number of marine invertebrate fossils we add those of the Foraminifera, insects, plants, and the vertebrata, we have a total of 1,228 species in the British Liassic deposits.

CLASS CEPHALOPODA.—All the genera are, at least, Mesozoic; one only, *Xiphoteuthis*, is peculiar.

CLASS GASTEROPODA.—A large proportion of the genera date from the Trias, such are *Acteonina*, *Chemnitzia*, *Cerithium*, *Fusus*, *Neritopsis*, etc.; a few range upwards from the older rocks, as *Chiton*, *Dentalium*, *Litorina* (?), *Patella*, *Natica*, *Pleurotomaria*, *Turbo*, and *Trochus* (?); *Cryptenia* became extinct in the Middle Lias; *Alaria* and *Trochotoma* commence in the Rhætic; whilst *Bulla*, *Cryptolax*, *Exelissa*, *Onustus*,

¹ M. Jules Martin, E'tage Rhætien.

Purpurina, *Pileolus*, *Pterocera*, *Rimula*, *Puncturella*, *Pyrula*, *Tectaria*, *Tornatella* (?), and *Turbinella* begin with the Lias. No genus of Gasteropodous shells is peculiar, if we except *Pterocheilos* and *Pleuratella* (Moore), which appear to be founded on immature individuals, and, consequently, may prove eventually to belong to known genera.

CLASS CONCHIFERA.—Here, also, the majority of the genera commenced in the Trias, whilst a few range from Palæozoic times through succeeding formations, such as *Cypricardia*, *Pinna*, *Solemya*, *Inoceramus*, etc. *Azinopsis* and *Myophoria* do not pass beyond the Lower Lias. *Protocardium*, *Cythere*, *Pholadomya*, *Gastrochæna*, *Placunopsis*, *Saxicava*, and *Tancredia* date from the Rhætic; whilst *Exogyra*, *Fistulana*, *Gresslya*, *Goniomya*, *Homomya*, *Limopsis*, *Pleuromya*, *Pholas*, *Pteroperna*, *Sowerbya*, *Spondylus*, *Thracia*, *Trigonia*, *Teredo*, *Unicardium*, and *Venus* are not elder than the Lias. The following genera are peculiar, *Cardinia*, *Conchodon*, *Hippopodium*, and *Terquemia*.

CLASS BRACHIOPODA.—The majority of the genera have an extensive range; *Leptæna* becomes extinct in the Upper Lias. *Megerlea*, *Terebratella*, *Terebratulina*, and *Zellania* commence in this system, and *Suessia* is confined to it.

CLASS POLYZOA.—With the exception of *Berenicea*, all the genera of Polyzoa date from the Lias.

CLASS CRUSTACEA.—All the Malacostracous Crustaceans belong to Mesozoic genera; *Scapheus* is peculiar. Of the Entomostraca, all have a wide range, if we except *Aspidocaris*, recalling the Palæozoic genus *Discinocaris*, which is Triassic and Liassic. Of the Cirripedia, *Pollicipes* dates from the Rhætic, and *Zoecapsa* is peculiar.

CLASS ANNELIDA.—*Terebella* and *Vermicularia* commence in the Lias, the other genera are much older.

CLASS ECHINODERMATA.—Excepting *Cidaris* and *Rhabdocidaris*, which are also Triassic, all the genera of Echinidea date from the Lias; *Microdiadema* is peculiar. All the genera of Ophiuridea are represented in existing seas; so also the Asteroidea, excepting *Tropidaster* and *Plumaster*, which are peculiar. The Crinoidea comprises *Pentacrinus* ranging from the Trias, *Apiocrinus*, *Cotylederma*, and *Eugeniocrinus* from the Lias, and *Extracrinus* and *Microcrinus*, which are peculiar.

CLASS ZOANTHARIA.—About one-half the genera of corals are represented in the Trias, a few are peculiar, whilst the rest range upwards from the Lias.

CLASS SPONGIDA.—*Neurofungia* is doubtfully peculiar.

If we confine our attention to the succession of life in the British strata, then the generic grouping in the three members of the Lias becomes more pronounced:—the Middle Lias being the horizon at which appear *Rotella*, *Niso*, *Opis*, and *Linea*; the Upper Lias the same for *Trigonia*, *Corbis*, *Cythere*, and *Macrodon*.

The distribution of some of the peculiar and restricted genera in

the three members of the Lias is represented in the following table:—

	Lower.	Middle.	Upper.		Lower.	Middle.	Upper.
<i>Beloteuthis</i>	.	.	x	<i>Terebratulina</i>	x	x	.
<i>Teudopsis</i>	.	.	x	<i>Stomatopora</i>	x	.	.
<i>Xiphoteuthis</i>	.	x	.	<i>Neuropora</i>	x	x	.
<i>Bulla</i>	.	x	.	<i>Proboscina</i>	x	.	.
<i>Cryptænia</i>	x	x	.	<i>Semimulticlausa</i> . . .	x	.	.
<i>Cryptolax</i>	.	.	x	<i>Lichenopora</i>	x	.	.
<i>Exelissa</i>	.	x	.	<i>Spiropora</i>	.	x	.
<i>Pileolus</i>	.	x	.	<i>Magila</i>	.	.	x
<i>Purpurina</i>	.	x	.	<i>Uncina</i>	.	.	x
<i>Puncturella</i>	.	x	.	<i>Megacheirus</i>	x	.	.
<i>Onustus</i>	.	x	x	<i>Scapheus</i>	x	.	.
<i>Azinopsis</i>	x	.	.	<i>Æger</i>	x	.	.
<i>Cardinia</i>	x	x	.	<i>Hefriga</i>	.	.	x
<i>Gresslya</i>	.	x	x	<i>Pollicipes</i>	x	.	.
<i>Hippopodium</i>	x	x	.	<i>Zoecapsa</i>	?	.	.
<i>Isocardia</i>	.	x	.	<i>Holcetypus</i>	.	x	.
<i>Limopsis</i>	.	x	.	<i>Heterocidaris</i>	.	.	x
<i>Pholas</i>	.	.	x	<i>Pygaster</i>	.	x	.
<i>Spondylus</i>	.	.	x	<i>Uraster</i>	.	x	.
<i>Terquemia</i>	x	x	.	<i>Tropidaster</i>	.	x	.
<i>Trigonia</i>	.	x	x	<i>Luidia</i>	.	x	.
<i>Teredo</i>	.	.	x	<i>Plumaster</i>	.	x	.
<i>Venus</i>	.	x	.	<i>Astropecten</i>	.	x	.
<i>Leptæna</i>	.	x	x	<i>Cotyloderma</i>	.	x	.
<i>Megerlea</i>	.	x	.	<i>Microcerinus</i>	x	.	.
<i>Suessia</i>	.	x	.	<i>Oppelosmia</i>	x	.	.
<i>Terebratella</i>	.	x	.	And most Corals* . . .	x	.	.

* The distribution of the Corals is the inverse of that of the Star-fishes.

DESCRIPTIONS OF NEW SPECIES:

Cerithium Huttoni, nov. spec.—Shell small, turriculated, spire acute, whorls six, angulated; penultimate whorl ornamented with four very prominent obtuse encircling smooth ribs, the upper two smaller than the lower ones, the superior one of the latter carinating the whorl; the lower half of the last whorl with a few smooth ribs; interspaces apparently smooth. Aperture subquadrate. *Marlstone*. Dumbleton (Coll. Mrs. Hutton, *neé* Holland, to whom the species is dedicated).

Cerithium ligaturalis, nov. spec.—Shell cylindrical, turreted, spire acute, whorls about 15, imbricating, ornamented with a broad depressed band encircling the upper suture, and a narrow one around the lower suture; the carina at about the anterior third of each whorl. Transverse striæ oblique and distant; last whorl with three ribs below the keel. Base convex, smooth; aperture elongated; canal obsolete. Allied to *C. Sidæ* (D'Orb.) and *C. Ibez* (Tate). *Marlstone*. Red Mile, Lincolnshire. (Coll. Geol. Surv.)

Cerithium Dayii, nov. spec.—Differs from *C. subreticulatum* (D'Orb.), in its excavated suture, fewer (4) longitudinal and transverse lines, which produce denticulations rather than granulations, and from *C.*

Ilminsterensis (Moore), in having four rows of subspinous costulæ. *Middle Lias*. Down Cliff, Charmouth. (Day-Coll., Geol. Surv. Mus.)

Cerithium subfistulosa, nov. sp.—Related by its form and ornamentation to *Chemnitzia fistulosa*, Stol., and *Turritella inæquicinctum*, Münst.; from the former it differs in its serrated median rib, in being proportionately broader, and in the absence of transverse striæ; and from the latter chiefly in its fewer ribs. *Marlstone*. Red Mile, Lincolnshire. (Coll. Geol. Surv.)

Cerithium raricostati, nov. sp.—Elongated, whorls 10, convex, upper ones subangulated, with a broad and deep suture, ornamented with about 25 *strongly-curved, thick*, transverse ribs, crossed by about 8 lamelliform costæ. *Zone of Ammonites raricostatus*. Churchdown. (Rev. F. Smith.)

Chemnitzia trivia, nov. sp.—Shell elongated, of about 15 convex whorls; closely allied to *C. Carusensis* (D'Orb.), but not so slender; the posterior whorls with numerous, stout, oblique, not arched, ribs (the anterior ones, occasionally with abruptly curved ribs), crossed by fine longitudinal lines. *Lower Lias Limestone*. Bridgend. (R. T.)

Chemnitzia complicata, nov. spec.—Whorls rounded, suture impressed; last whorl ornamented with about fifty thick oblique ribs, which as they approach the anterior suture split up into fine raised lines; and about ten inequidistant longitudinal sulci; those bounding the posterior suture forming granulations. Base striated. *Marlstone*. Hyde, near Yeovil. (Geol. Surv. Mus.)

Natica pilula, nov. sp.—Very small, globose, spire depressed, slightly convex, whorls 4 to 5, ornamented with fine longitudinal lines; aperture narrow. *Upper Lias*. Dumbleton, very abundant. (Rev. P. B. Brodie, etc.)

Trochus inconstans, nov. sp.—Very similar to *T. turriiformi*, K. and D., from which it differs chiefly in the variable form of the whorls. Turreted, conical, apex acute; whorls from 15 to 20, smooth, flat, or with a broadly channelled suture, or as sometimes they are slightly imbricating. *Lower Lias*. Bridgend. (R. T.)

Solarium inornatum, nov. sp.—Very small, closely allied to *S. Thomsoni* (Tate); orbicular spire obtuse, subdepressed, whorls four, convex, smooth, shining with fine striæ of growth; base flat with radiating wrinkles and striæ; umbilicus narrow, aperture sub-quadrate; columella straight, callously thickened in front. *Middle Lias*. Chipping Campden. (Rev. P. B. Brodie.)

Solarium lucens, nov. sp.—Differs from *S. inornatum* in its more elevated and acute spire, and the raised margin bounding the anterior suture of the upper whorls. Whorls four, smooth, shining, coarsely wrinkled; reddish-yellow in colour; last whorl sub-angulated. *Middle Lias*. Mickleton. (Mr. Gavey.) The last two species are provisionally referred to *Solarium*, and may, with some others, belong to a genus not yet defined.

Monodonta modesta, nov. sp.—Small, turbinated, conical, spire short, composed of four nearly flat, smooth, shining whorls; suture linear; last whorl large, obtusely angulated; base oblique and im-perforate. *Marlstone*. Churchdown, Cheltenham. (R. T.)

Acteon tessellatus, nov. spec.—Ovate elongated, whorls six, convex, bluntly keeled at the suture; last whorl ornamented with about twenty narrow, equidistant, longitudinal sulci, and fine, close, perpendicular striæ, which produce a punctated appearance within the sulci. Aperture oval. Total length, eleven-twentieths of an inch. Differs from *A. Broliensis* (Buv.), chiefly in its ovate form. Marlstone. Gratton, Gloucestershire. (Coll. Dr. Holl.)

Opis Deslongchampsii, nov. sp.—Shell subtrigonal, ventricose, somewhat compressed; umbones anterior, acute, and subspiral; posterior side truncated, anterior rounded; obliquely keeled posteriorly and anteriorly. Ornamented by a few imbricating lamellæ of growth, and by numerous flat, transverse costæ. Middle Lias. Gasteropod bed; May! Marlstone; Uley, Gloucestershire. (Coll. Geol. Surv.)

CATALOGUE OF MARINE INVERTEBRATA OF THE LIAS.¹

	No. Specs.			No. Specs.	
	Brit.	Euro		Brit.	Euro
TABLE I.					
CLASS CEPHALOPODA.					
<i>Ammonites</i>	128	266	<i>Pitonillus</i>	2	4
<i>Belemnites</i>	57	105	<i>Pleurotomaria</i>	23	67
<i>Nautilus</i>	9	17	<i>Pterocera</i>	1	2
<i>Sepiade</i>	1	11	<i>Puncturella</i>	.	2
<i>Xiphoteuthis</i>	1	1	<i>Purpurina</i>	1	1
CLASS GASTEROPODA.					
<i>Acteonina</i>	12	35	<i>Pyrula</i>	1	1
<i>Alaria</i>	6	21	<i>Rimula</i>	.	1
<i>Bulla</i>	.	2	<i>Rotella</i>	.	1
<i>Capulus</i>	.	2	<i>Solarium</i> ³	15	31
<i>Cerithium</i>	40	79	<i>Stomatia</i>	.	1
<i>Chemnitzia</i>	19	55	<i>Tectaria</i> ⁴	22	40
<i>Chiton</i>	2	3	<i>Tornatella</i>	8	14
<i>Cirrus</i>	.	3	<i>Cinulia</i>	.	1
<i>Cryptænia</i>	6	16	<i>Trochotoma</i>	1	9
<i>Cryptolax</i>	1	1	<i>Trochus</i>	27	79
<i>Dentalium</i>	8	11	<i>Turbinella</i>	1	1
<i>Emarginula</i>	3	5	<i>Turbo</i>	31	59
<i>Hydrobia</i>	.	1	<i>Turritella</i>	6	26
<i>Fusus</i>	3	7	CLASS CONCHIFERA.		
<i>Exelissa</i>	1	1	<i>Anatina</i>	5	8
<i>Litorina</i>	2	6	<i>Anomia</i>	4	8
<i>Monodonta</i>	1	1	<i>Arca</i>	5	13
<i>Natica</i>	5	15	<i>Astarte</i>	14	36
<i>Neritina</i>	3	4	<i>Avicula</i>	21	37
<i>Neritopsis</i>	4	11	<i>Axinopsis</i>	.	1
<i>Niso</i>	3	17	<i>Cardinia</i>	16	49
<i>Onustus</i>	3	5	<i>Cardita</i>	3	6
<i>Patella</i>	7	12	<i>Cardium</i>	5	11
<i>Phasianella</i>	3	11	<i>Ceromya</i>	2	3
<i>Pileolus</i>	.	1	<i>Conchodon</i>	.	1
			<i>Corbis</i>	1	2
			<i>Corbula</i>	.	3
			<i>Cucullæa</i>	13	19

¹ MS. species are not included.² Certain forms referred to this genus are *Opercula Neritopsis*.³ Including *Discohelix* and *Straparolus*.⁴ Including *Amberleya* and *Eucyclus*.

	No. Specs.			No. Specs.	
	Brit.	Euro		Brit.	Euro
<i>Cypricardia</i> ...	12	22	<i>Waldheimia</i> ...	12	20
<i>Cythere</i> ...	.	1	<i>Zellania</i> ...	4	4
<i>Exogyra</i> ...	2	2	CLASS POLYZOA.		
<i>Fistulana</i> ...	.	1	<i>Berenicea</i> ...	2	3
<i>Gastrochæna</i> ...	1	1	<i>Lichenopora</i> ...	.	1
<i>Gervillia</i> ...	10	16	<i>Neuropora</i> ...	1	6
<i>Goniomya</i> ...	4	9	<i>Proboscina</i> ...	.	1
<i>Gresslya</i> ...	5	8	<i>Porosmilæa</i> ...	.	1
<i>Gryphæa</i> ...	3	3	<i>Semimulticlausa</i> ...	.	1
<i>Hinnites</i> ...	3	3	<i>Spiropora</i> ...	1	2
<i>Hippopodium</i> ...	2	2	<i>Stomatopora</i> ...	1	2
<i>Homomya</i> ...	1	3	CLASS CRUSTACEA.		
<i>Inoceramus</i> ...	7	12	I. Malacostraca.		
<i>Isocardia</i> ...	1	2	<i>Æger</i> ...	1	1
<i>Leda</i> ...	15	31	<i>Eryma</i> ...	3	9
<i>Lima</i> ...	23	33	<i>Eryon</i> ...	6	9
<i>Limæa</i> ...	1	4	<i>Glyphæa</i> ...	4	8
<i>Limopsis</i> ...	1	1	<i>Hebriga</i> ...	1	1
<i>Lithodomus</i> ...	.	2	<i>Magila</i> ...	.	1
<i>Macrodon</i> ...	1	1	<i>Megacheirus</i> ...	.	2
<i>Myoconcha</i> ...	3	5	<i>Palinurina</i> ...	2	2
<i>Myophoria</i> ...	.	1	<i>Penæus</i> ...	2	3
<i>Mytilus</i> ...	18	27	<i>Pseudoglyphæa</i> ...	2	5
<i>Opis</i> ...	8	10	<i>Scapheus</i> ...	1	1
<i>Ostrea</i> ...	2	5	<i>Uncina</i> ...	.	1
<i>Pecten</i> ...	25	50	II. Entomostraca.		
<i>Perna</i> ...	3	5	<i>Aspidocaris</i> ...	.	1
<i>Pholadomya</i> ...	9	30	<i>Bairdia</i> ...	.	5
<i>Pholas</i> ...	.	1	<i>Cythere</i> ...	3	11
<i>Pinna</i> ...	4	9	<i>Cytherella</i> ...	0	10
<i>Placunopsis</i> ...	2	4	<i>Estheria</i> ...	.	1
<i>Pleuromya</i> ...	8	30	<i>Moorea</i> ...	1	1
<i>Plicatula</i> ...	8	30	<i>Pollicipes</i> ...	2	3
<i>Posidonomya</i> ...	1	5	<i>Zoocapsa</i> ...	1	1
<i>Pteroperna</i> ...	1	1	CLASS ANNELIDA.		
<i>Saxicava</i> ...	2	6	<i>Ditrupa</i> ...	4	4
<i>Solemya</i> ...	.	1	<i>Galeolaria</i> ...	1	2
<i>Solen</i> ...	1	2	<i>Serpula</i> ...	7	22
<i>Sowerbya</i> ...	1	1	<i>Spirorbis</i> ...	1	2
<i>Spondylus</i> ...	.	3	<i>Terebella</i> ...	.	1
<i>Tancredia</i> ...	3	17	<i>Vermicularia</i> ...	1	1
<i>Teredo</i> ...	.	1	CLASS ECHINODERMATA.		
<i>Terquemia</i> ...	2	5	<i>Aerosalenia</i> ...	1	2
<i>Thracia</i> ...	2	6	<i>Cidaris</i> ...	2	10
<i>Trigonia</i> ...	4	7	<i>Collyrites</i> ...	.	1
<i>Unicardium</i> ...	4	16	<i>Diademopsis</i> ...	.	3
? <i>Venus</i> ...	2	3	<i>Diplocidaris</i> ...	1	1
CLASS BRACHIOPODA.			<i>Hemicidaris</i> ...	.	1
<i>Crania</i> ...	3	4	<i>Hemipedinæ</i> ...	4	12
<i>Discina</i> ...	5	6	<i>Heterocidaris</i> ...	.	1
<i>Leptæna</i> ...	5	6	<i>Holactypus</i> ...	1	1
<i>Lingula</i> ...	4	6	<i>Microdiadema</i> ...	.	1
<i>Megerlea</i> ...	2	2	<i>Pseudodiadema</i> ...	1	3
<i>Rhynchonella</i> ...	19	28	<i>Pygaster</i> ...	.	1
<i>Spiriferina</i> ...	8	12	<i>Rhabdocidaris</i> ...	1	3
<i>Seussia</i> ...	1	2	<i>Ophioderma</i> ?	1	1
<i>Terebratella</i> ...	1	1	<i>Ophioglyphæa</i> ...	8	8
<i>Terebratula</i> ...	4	10			
<i>Terebratulina</i> ...	1	2			
<i>Thecidium</i> ...	7	16			

	No. Specs.			No. Specs.	
	Brit.	Euro		Brit.	Euro
<i>Ophiura</i> ?	1	1	<i>Theocyathus</i>	2	2
<i>Astropecten</i>	1	1	<i>Thecoseris</i>	.	2
<i>Luidia</i>	1	1	<i>Thecosmilia</i>	11	15
<i>Plumaster</i>	1	1	CLASS SPONGIDÆ.		
<i>Tropidaster</i>	1	1	<i>Cliona</i>	.	2
<i>Uraster</i>	2	2	<i>Grantia</i>	1	1
<i>Apiocrinus</i>	1	1	<i>Neurofungia</i>	1	1
<i>Cotylederma</i>	2	5	TABLE II.		
<i>Eugenocrinus</i>	.	2	SUMMARY.		
<i>Extracrinus</i>	2	2	<i>Cephalopoda</i>	196	400
<i>Microcrinus</i>	.	1	<i>Gasteropoda</i>	269	650
<i>Pentacrinus</i>	9	24	<i>Conchifera</i>	297	622
<i>Plicatocrinus</i>	1	2	<i>Brachiopoda</i>	76	119
CLASS ZOANTHARIA.			<i>Polyzoa</i>	5	17
<i>Actinastrea</i>	.	1	<i>Crustacea</i>	29	76
<i>Antillia</i>	.	2	<i>Annelida</i>	14	32
<i>Astrocænia</i>	12	13	<i>Echinodermata</i>	42	93
<i>Cladophyllia</i>	.	1	<i>Zoantharia</i>	67	124
<i>Cladomilia</i>	.	1	<i>Spongiade</i>	2	4
<i>Oyathocænia</i>	4	4	The life of the British Triassic Rocks is completed by the following:—		
<i>Elyastrea</i>	2	2			
<i>Epismilia</i>	.	3			
<i>Iaastrea</i>	8	15			
<i>Latimeandra</i>	1	1			
<i>Lepidastrea</i>	.	1	Reptiles	31	
<i>Lepidophyllia</i>	2	2	Fish	114	
<i>Microsolena</i>	.	2	Insects	24	
<i>Montlivaltia</i>	18	47	Foraminifera... ..	49	
<i>Oppelomilia</i>	1	1	Plants	12	
<i>Pleuropora</i>	.	1			
<i>Rhabdophyllia</i>	2	2			
<i>Septastrea</i>	4	4			
<i>Stephanastrea</i>	.	1			
<i>Stylastrea</i>	.	2	Grand Total	1227	

III.—THE DEVELOPMENT OF LAND.

By J. CLIFTON WARD, F.G.S.; Associate of the Royal School of Mines; of the Geological Survey of England and Wales.

WHENEVER a bone is about to be produced in the animal body, its form is first sketched out in connective tissue or cartilage, and then ossification commences at one or several points; if there is but one centre of ossification, or if several centres unite, but one bone is formed; if the several centres do not completely unite, as many separate bones are produced.

Now, in the growth of continental land there is something very akin to this. The present form of many countries has been sketched out in a general way long ages ago, and is due to growth around a single centre or several centres. One of the most simple examples of this is perhaps to be found in the geological history of Italy.

Fig. 1. Diagrammatic Section across Italy in about the latitude of Rome.
a. Jurassic. b. Cretaceous. c. Eocene. d. Miocene and Pliocene.