Having premised these few remarks, we proceed to treat of this sub-kingdom under the following divisions or classes :— I. The Intestinal Worms ; II. The Echinodermata or Sea-stars; III. The Acalephæ or Sea-Jellies; IV. The Polypes or Zoophytes properly so called; V. The Sponges ; and VI. The Lithophytes.

I.—INTESTINAL WORMS.@@1

It affords a striking illustration of the wide diffusion of animal life to have ascertained the fact, that almost every species of the vertebrated orders, and very many of the inferior classes, afford, either within or on the surface of the body, a place of nativity and domicile to one or more living creatures, framed with especial adaptation to the circum­stances of their destined abodes. They do not however infest every animal indiscriminately ; for, on the contrary, the parasites of almost every species are peculiar to itself, or they are confined to a few of analogous habits and struc­ture. There are some partial exceptions. Thus, the fluke *(Distoma hepaticum),* so common in the liver and gall-ducts of sheep and other domestic cattle, is found occasionally in the liver of man, but comparatively so small as to have been sometimes looked upon as a distinct species. The *Ascaris lumbricoides* of man is identical with that found in the horse, the ox, and the sow ; his *Trichocephalus* occurs in the ape ; the *Cysticercus* of the cellular tissue is common to him and the ape and pig ; and the *Strongylus giganteus* has a wide range, not fearing man, and rioting in the kidney of many of the inferior animals. Froelich took from a tropical parrot an *Ascaris,* which was apparently identical with a worm that Rudolphi found in our domestic pigeon ; and similar examples, more especially from among the parasites of fishes, might be instanced.@@2 But there is no example of a worm being common to a warm and a cold-blooded animal ; nor does the same worm ever occur in the mammalia and in birds, nor in amphibia and in fishes ; nor, indeed, in the species of any two well-distinguished classes ; and so also it is ascertained that the parasites of the carnivorous animals (with the sole exception of the renal parasites) are in every instance different in kind from those of the vegetable feeders.

It must not however be concluded, that of the animals liable to the attacks of intestinal worms, every individual is vermigerous. On the contrary, the Entozoa in general are comparatively of rare occurrence, and many are so rare that few helminthologists, of however wide research, have ever met with them. Mr Lawrence has seen a female, who from time to time has voided many hundreds of small worms *(Spiroptera hominis)* from the urinary bladder;@@’ but, so far as is known, no other human being was ever so afflicted. Goeze found in the boar a *Trichocephalus,* which Rudolphi has sought for in vain both in wild and domestic swine; and he tells us he had dissected innumer­able mice in a fruitless search after their *Trichocephalus,* described also by the first-named naturalist.@@4 These are undoubtedly extreme cases, but they place in a strong light the partial and accidental diffusion of these crea­tures. What circumstances determine them to select one individual in preference to another, are unknown, though reasons enough have been stated, of all which it may be safely said that the facts adverse to their admission are al­most as many as those in their favour. There is no de­nying that worms in general often infest the delicate and sickly ; that youth is favourable to the evolution of some, and maturity to that of others ; and females may be more verminous than males; but the contraries are numerous, and the lovers of statistics have not yet balanced the pro­portions. A crude farinaceous diet has been much blamed, and we should suppose justly ; yet the poor of Scotland, who subsist much on such a diet, are not more wormy than the better fed poor of England. Rich moist pastures are said to be favourable to the generation of the fluke in our sheep and cattle ; but this is only the case with some pastures, which, in every district, have acquired this bad pre-emi­nence, and on which certainly our herds cannot be fed many days without the certainty of being tainted. Salt pastures are, on the contrary, unfavourable or destructive to the fluke and worms in general ; nor in man does any cause apparently more certainly predispose the body to their visitation than an unsalted innutritive diet. “ Salt,” says Dr Paris, “ when taken in moderate quantities, pro­motes, while in excessive ones it prevents, digestion : it is therefore tonic and anthelmintic, correcting that disordered state of the bowels which favours the propagation of worms.” And as an instance of the results of its want, Lord Somer­ville adduces a punishment which formerly existed in Hol­land. “ The ancient laws of that country ordained men to be kept on bread alone, *unmixed with salt,* as the severest punishment that could be inflicted upon them in their moist climate ; the effect was horrible : these wretched criminals are said to have been *devoured by worms,* engendered in their own stomachs.”@@5

The extrinsic causes which give a predisposition to worms are as little known as those which act immediately on the body. Very few avertebrated animals are vermiparous, while there is probably no species of vertebrate that is ex­empted from parasites. Of the latter class, such species as have been reduced to domesticity, or are retained captive, are more subject to worms than the wild and untamed ; and fishes appear to be pre-eminently infested with them. It is not yet determined that the same parasites infest the same animals in different and remote countries, although this is probably the case ; but a few facts, relating princi­pally to the human species, seem to prove that climate has a certain influence over their generation. The *Pilaria medinensis,* or Guinea-worm, is only found under the torrid zone, in Asia and Africa ; and the *Furia infernalis* is pe­culiar to Lapland.@@® *Ascarides* prevail to such an extent in Abyssinia, as to regulate in some degree the movements of the inhabitants ; and in the West India islands, intesti­nal worms in general are much more common than they are in Europe. We know, on the evidence of Vallisnerius, that *Ascarides* are very frequent in the calves of Italy ; while those born from the cows of Germany, says Rudol­phi, are rarely infested with them. Hasselquist tells us that when in Cairo he was told that three fourths of the inhabitants were diseased with *Tania solium;* and “ I have been informed by my friend Dr Knox,” says Dr Hodgkin, “ that our troops which were stationed in and near the Cape were generally infested by these animals.”@@7 Egypt and Africa may then perhaps be considered as the lands of choice of this Tænia, which however has spread, though in smaller numbers, over Germany, Holland, England, and France. In the latter country, it occurs, but not simulta­neously in the same individual, with the *Tania lata,* Linn.— a species of extreme rarity in the English, Dutch, and Ger­mans, but very common in the natives of Switzerland and

@@@1 Synonymes : *ἕλμινϑες ;* Entelmintha ; Vermes ; Intestina ; Vermes intestinales ; Splanchnelmintha ; Entozoa ; Vers intestinaux.

@@@2 Of upwards of 200 species examined by Dr Bellingham, several occurred in six, others in ten, and one in fifteen different animals.

*@@@3 Medico-Chirurg. Trans,* ii. p. 382. *Cyclop. of Anat. and Physiology,* ii. p. 124.

*@@@4 Ent. Hist. Nat.* ii. part ii. p. 96, 97.

@@@s Paris's *Pharmncologia,* p. 517. Lond. 1820, 8vo.

@@@6 Rudolphi considers the Furia an apocryphal animal, but in favour of its existence we have to add to the testimony of Linnæus and So- lander that of Dr E. D. Clarke. *Travels in Scandinavia,* part i. p. 208.

*@@@, Lectures on Morbid Anatomy,* vol. i. p. 200.