

provide for itself, the Nauplius has become degraded into a mere skin; in *Ligia* this larva-skin has lost the traces of limbs, and in *Philoscia* it is scarcely demonstrable."

Once more, the Echinodermata in most cases "go through a very well-marked metamorphosis, which often has more than one larval stage. The distinctive character of the metamorphosis appears to be the possession by the larvæ of at least a mouth and pharynx, which, whether absorbed or cast off, is never converted into the corresponding organs of the perfect Echinoderm developed inside of the provisional organism. The mass of more or less differentiated sarcode, of which the larva, or pseud-embryo, as opposed to the Echinoderm within it, is made up, always carries upon its exterior certain bilaterally-arranged ciliated bands, by the action of which the whole organism is moved from place to place, and it may be strengthened by the superaddition to it of a framework of calcareous rods."*

Thus Fig. 39 represents a larva of *Echino-cidaris*, after Muller;† The body is transparent, $\frac{1}{6}$ in length, shaped somewhat like a double easel, but with two long horns in front, which, as well as the posterior processes, are supported by calcareous rods. These larvæ swim by means of minute vibratile hairs, or ciliæ. They have a mouth, stomach, and in fact, a well-defined alimentary canal, but no nerves or other organs have yet been discovered in them. After swimming about in this condition for awhile, they begin to show signs of change. An involution of the integument takes place on one side of the back, so as to form a pit or tube, which continues to deepen till it reaches a mass or store of what is called blastema, or, as we may say, the raw material of the animal body. This blastema then begins to grow, and gradually assumes the form of the perfect Echinoderm. In doing so it surrounds and adopts the stomach of the larva, but forms for itself a new mouth or gullet, throwing off the old mouth, together with the intestine, the calcareous rods, and in fact all the rest of the body of the larva.

Fig. 40 represents a larva probably of *Echinus lividus*, from the Mediterranean, and shows the commencement of the sea egg within the body of the larva. The capital letters denote the different arms, *a* is the mouth, *a'* the œsophagus, *b* the stomach, *b'* the intestine, *f* the ciliated lobes or epaulets, *c* the young sea-egg.

JOHN LUBBOCK

(To be continued.)

EXTIRPATION BY COLLECTORS OF RARE PLANTS AND ANIMALS

THE Legislature, having very properly provided for the preservation of small birds, might extend its protection to other animals and to plants; for although it would be inexpedient to prevent individuals from taking rare insects and botanical specimens, it is surely expedient to deter persons or societies from offering premiums which are leading to the extirpation of such species.

Some years ago a judicious and formal protest against this culpable practice was published by many of the most eminent British botanists, and it has constantly been deplored by all true lovers of natural science. The respected president (the Rev. Dr. Mitchinson) of our East Kent Natural History Society, in his address at the last annual meeting thereof at Canterbury, made such strong observations on the subject as might raise the question whether local societies may not do as much harm by promoting the extirpation of rare plants and animals as good in other respects; and I have always been insisting, at the meetings of the same society and elsewhere, that it is our duty to cherish, and not destroy the precious plants and animals of the

* "Rolleston—"Forms of Animal Life," p. 246.

† Über die Gattungen der Seeigellarven. Siebente Abhandlung. Kon. Akad. d. Wiss. zu Berlin. Von Joh. Müller, 1855, Pl. iii. fig. 3.

district. Whenever a rare plant or animal is exhibited at those meetings, we have always a wail about its having been "not long since often seen, though now fast disappearing." A chief cause of this is the deplorable rapacity of collectors of and traffickers in specimens; since the preposterous notion prevails that botany and entomology consist in a recognition of the mere physiognomy, without the least regard to the physiology, of species, and being able to call them by their scientific names.

And so it will be while local societies continue to encourage such errors, instead of promulgating the essential principles of botanical or entomological science, and obstructing the injurious operations of mere collectors or pretenders. And this desirable end, so far as regards taxonomy, might be easily attained without the least harm to rare species. Prizes for the best display, illustrated by microscopic drawings and preparations of the generic and specific characters of sections or the whole of many natural orders would afford really good tests of the industry and attainments of the candidates. For example, why not try for this purpose the Willows, Grasses, or Sedges? Two of these orders have the further recommendation of being of great economic value. Again, as specific distinctions seem to be the ultimate aim of these societies, certain cells or tissues, such as the pollen, epidermis, hairs, and stomata, would afford good subjects for investigation in this point of view, as would also raphides and other plant-crystals, and very likely disclose valuable characters not yet recognised in the books of systematic botany.

I have been led to these remarks by the increasing frequency of the practice now deplored. As the "West Kent Natural History, Microscopical, and Photographic Society" is much and deservedly respected, and exercises justly considerable influence in its department, an extract from its last "Council's Report," p. 19, will suffice as a sample of the mischief:—"With a view to promote the study of Entomology and Botany among the members of the Society and their families, the Council, in the early part of the year, announced their intention of giving two prizes of 5*l.* 5*s.* each, one for the best Botanical collection, the other for the best collection of Lepidopterous Insects; all specimens to be gathered or taken within the West Kent district." This quotation is by no means intended for blame to any particular society, but merely as an example taken from one of the printed "Reports" that has lately reached me of what is still being sown broadcast generally throughout the country.

And here we have plainly not only a reward of money for the best collection of plants and Lepidoptera in a given district, but a temptation or inducement to unscrupulous collectors, in their anxiety to win the prize and defeat their competitors, to destroy such rare specimens as they may not take away. Such nefarious conduct is not meant to be insinuated of the West Kent Society; but my object is simply to assert that which I know has too often been the effect of such prizes, and to invoke the aid of NATURE in suppressing the evil.

GEORGE GULLIVER

A FRENCH PHYSICAL SOCIETY

THE scientific movement increases in France; it began about the end of the Empire, under the ministry of Duruy, and has since taken greater proportions, especially after the last war. The new French Association for the Advancement of Science,* it is well known, is modelled after the British Association, the success of which has surpassed expectation.

The physicists of Paris have assembled for several years in the laboratories of the Superior Normal School, placed at their disposal by M. Berlin, the director of the scientific studies of this school. They conversed about physics

* See NATURE, vol. v. p. 357.

recent theories were set forth, the new or little known instruments were shown and explained. Thus Sir Wm. Thomson's electrometer, and several experiments of Prof. Tyndall called forth the curiosity and attention of the assistants. But those amicable meetings are no longer sufficient; the necessity of a more formal gathering was felt; as well as of writing and publishing Transactions, that the notes and observations might not be completely lost. The members of the Institute of the physical section encouraged the new society by their warm approval.

On the 17th of January of the present year, in the Salle Gerson, an *annexé* of the Faculté des Sciences of Paris (*Sorbonne*), a number of physicists met. They accepted provisional statutes, and elected a board. The provisional statutes proposed by a committee composed of MM. d'Almeida, Alfred Cornu, Gernez, Lissajous, Mascart, expressed, in a few articles, the basis of the new association.

The purpose of the society is to promote physics; it will have two sittings a month alternately with the Chemical Society, and will publish transactions that will be sent to the members. The members are divided into resident, non-resident, and honorary members, the last chosen by election from among the most eminent men in France and abroad. In the first year six will be elected, and two only in each following year.

The society will be glad to receive such gifts as will facilitate its work, and will inscribe in its Transactions the names of the givers.

The board is thus composed:—President, M. Fizeau, Member of the Institute; Vice-President, M. Bertin, Director of the Scientific Studies to the Superior Normal School; General Secretary, M. d'Almeida, Director of the new Journal of Physics; Secretary, M. Maurat, Professor of Physics to the Lycée St. Louis, of Paris; Vice-Secretary, M. Alfred Cornu, Professor of Physics to the Polytechnic School; Treasurer-Archivist, M. Phillippon, Secretary of the Faculté des Sciences of Paris.

The venerable M. Becquerel, who, notwithstanding his 89 years, assisted at the meeting, in order to give by his presence a proof of his adhesion to the new society, has been designed, by acclamation, an honorary member.

MAXIME CORNU

NOTES

PROF. OWEN has been appointed to a Civil Companionship of the Bath. If this is intended as an acknowledgment of Prof. Owen's services to science, it is not to the credit of Government that the honour was not conferred years ago.

PROF. TAIT's Rede Lecture on Thermo-dynamics will be delivered to-morrow.

HITHERTO the London "Companies," whose "fatness" is notorious, have done little or nothing for the promotion of scientific researches or education. It is therefore with the greatest pleasure we record that the Fishmongers' Company have handsomely presented to Mr. W. K. Parker, F.R.S., so well known for his valuable researches on the shoulder-girdle and skull in vertebrated animals, the sum of 50*l.*, in addition to an allowance of 20*l.* a year for the next three years in order to enable him to pursue such parts of his work as relate to the Anatomy of Fish. This we certainly think a step in the right direction, and the Fishmongers' Company deserve all praise for having been so original and generous as to be the first to take it. We hope their award to Mr. Parker is only an earnest of what they will do in the future, and that their example will not be lost on the other notoriously wealthy companies of the City of London. A few thousands a year would never be missed out of their enormous revenues, and would not diminish by a single dainty the sumptuousness of their numerous feasts; where-

as the amount of original and practically beneficial scientific work that could be done with the money, would yield them and the country generally a rich return. We daresay those who have the management of the funds of the various companies would be willing enough to divert a portion into scientific channels if they only knew how to go about it; the example of the Fishmongers' Company may afford them a hint. Moreover they need be at no loss, for there are plenty of eminent men of science competent and judicious enough to lend advice to the companies in this matter. Commerce, with which these companies are all more or less connected, owes much of its present gigantic dimensions and great prosperity to the discoveries and advances of science; gratitude and self-interest ought to urge our London merchants not to be indifferent to scientific progress. Let us also add, that their award to Mr. Parker is on a scale which shows a very slight acquaintance on the part of the City magnates with the value of time.

A FUSION has taken place between the local committee at Munich for erecting a statue to Justus von Liebig, and the committee appointed by the German Chemical Society at Berlin; the latter, in order to insure unity of action, giving way in the question as to where the statue should find its place. Notwithstanding the serious nature of the claims of Giessen, it was generally thought that the resting-place of the great chemist would unite the majority of votes of his admirers. A considerable number of leading German statesmen and foreign ambassadors have joined the committee, the full list of which will shortly be published.

FRESENIUS, who twenty-five years ago founded a school of chemistry at Wiesbaden, has celebrated the anniversary of its foundation amidst the festive concourse of his friends and pupils, and of the Government and learned societies of his country. A gloom was unfortunately cast over this event by the death of Mrs. Fresenius, which almost coincided with its celebration.

We regret very much to announce the death of Emanuel Deutsch, at Alexandria. His premature death is a very great loss to Eastern scholarship.

THE Alexandra Palace, under new management, reopens on Saturday. We hope the managers will not neglect the interests of science.

WE recently announced that the French Society for the Encouragement of National Industry had awarded its grand medal to Sir Charles Wheatstone. The following is an extract from the report of the Committee on the Economic Arts:—While the kaleidophone of Sir Charles Wheatstone has been the point of departure of the method which permits sounds to be studied by the aid of the eye; while his researches on the qualities of sound, on the production of vowels, while the creation of his speaking machine, have elucidated many points in the theory of the voice; while his ingenious apparatus, illustrating the propagation and the combination of waves, has facilitated the understanding of these delicate phenomena, and contributed to throw light on the mechanism of the undulatory motions, his numerous researches on the applications of electricity, in which he has shown, at the same time, profound science and a genius marvellously inspired, occupy a great place in the history of the electric telegraph. It is he who first realised, under conditions really practicable, this admirable means of communication between men and between nations, and we ought not to forget that, more than once, he has come *personally* among us to prepare its organisation and stimulate success. The unanimous choice made by the committee of the economic arts and cordially ratified by the Council honours our society as much as him who is the object of it. We are happy to give, on this occasion, a testimony of sympathy to a nation in which science is held in such high esteem. Those among us who have had the good fortune to visit the scientific