"If," said he, "I live to the ordinary age, I will gather a nobler collection than we have lost." The Smithsonian Institute, which from the first had been the generous patron of the Academy, was ready to transfer to him duplicates; the Museum of Comparative Anatomy, at Cambridge, through Agassiz, its director, had invited him to go there and select from its ample stores what he desired; and learned societies at home and abroad, in response to his appeals, were forwarding to his care copies of their Transactions. Under such auspices, the members of the Academy felt that its losses would soon be restored, and that its prestige would be more commanding than ever before. They now feel that in the death of their secretary they sustain a loss which is irreparable.

Dr. Stimpson had for some years the premonitions of the disease to which he has just succumbed. Two years ago he passed the winter on the Florida coast, making extensive collections of the flora and fauna of that region. The moist, warm breath of the ocean, he thought, invigorated him. Last autumn he repaired, in company with Dr. Veille, to the same region, embarking on board one of the Coast Survey steamers to superintend the deep-sea dredgings; but he had returns of hæmorrhage, which so far prostrated him as to defeat his purposes. For seventy days he remained on board, with nothing but ship fare to eat, at which his stomach revolted. Gaining the land, he was transferred to a hotel, but his physical powers were past the rallying point. Accompanied by Dr. Veille, he was at length placed on board a steamer, which landed him in Baltimore, from which place, by a short journey in a carriage, he was conveyed to Ilchester, where reside his wife's friends. Here he lingered a few weeks, dictating letters and pencilling short ones to his most intimate friends. And now comes the intelligence that the grave has closed over him, and that in his dying hours his thoughts centred on the Academy.

Dr. Stimpson had qualities which attracted, by the strongest ties, all who had personal relations with him. Modest and retiring in his disposition, the casual acquaintance little knew the vast range and the minute accuracy of his information—information gathered not simply from books, but from personal observation in every quarter of the globe. He has published enough already to create for his name an honourable place in the scientific opinion of the world; but if the full results of his labours could have been brought out, few scientific men in the country would have occupied a more commanding position.

J. W. F.

THE CEYLON ELEPHANT AT THE OXFORD MUSEUM

THERE has just arrived at the Oxford Museum the skeleton of a full-grown male Ceylon elephant. During the visit of the Duke of Edinburgh to Ceylon there were two elephant drives, or kraals, held, of which full accounts were given in the daily papers at the time. It may be remembered that at one of these kraals a large male elephant, a rogue, was driven into the terminal enclosure, together with several other smaller wild elephants. The rogue charged the tame elephants introduced amongst the wild ones, knocking them over repeatedly, and effectually preventing the process of noosing. It was at length found necessary to shoot him, in order that the remainder of the elephants might be secured.

The Governor of the island, Sir Hercules Robinson, desired that the skeleton of the animal should be preserved, and the Hon. P. C. Layard undertook the task. The elephant was covered slightly with earth, so as to protect the bones from rapacious birds; and the mound thus formed was fenced round to keep off jackals, &c. As soon as the bones were cleaned, they were collected and transported to Colombo. Mr. Layard, with his well-known zeal for the promotion of science,

took immense pains that the small bones should not be lost, and the skeleton is wonderfully perfect considering the great disadvantages under which it was prepared.

The bones were presented by Sir Hercules Robinson to the Oxford Museum, and all expenses of preparation and packing were defrayed by the colony. The skeleton was packed in two rum puncheons, under my superintendence. In packing heavy bones such as these for a long sea voyage great care must be taken, as, unless they are securely wedged into their places, they will grind against one another and get spoiled. There is nothing better than a cask for packing bones. Straw bands should first be wound round each of the large bones, and the head having been taken out of the cask, these large bones should be jammed in as closely as possible. The interstices should be filled with smaller bones and straw, which latter should be rammed in tight with sticks. As soon as the cask is quite full the head should be put in, and that end strained up tight with its hoops. The other end of the cask should now be turned uppermost, the hoops knocked off and the bottom taken out. It will be found that a good many more bones may now be introduced from this end, which must be rammed quite full like the other. By thus packing a cask from both ends, almost absolute immobility may be secured for the contents. The elephant's skeleton is a very fine one, and I believe the only one in England of a wild specimen. The ordinary museum specimens are all from menagerie animals, the muscular ridges and tuberosities of the bones of which are always badly marked. The elephant had what is called a tush, *i. e.*, a small short tusk on the left side. This tush is in the collection of the Duke of Edinburgh.

With the elephant arrived a Dugong, also presented to the Oxford Museum by Sir Hercules Robinson. The animal, which is a young one about 5 ft. long, was procured by Mr. Twinam, Government Agent at Jaffna. It was filled with salt and packed in charcoal. It has remained more than a year thus packed up, and is unfortunately in a very pulpy condition, although its external form is remarkably well preserved. Mr. Robertson hopes, with care, to be able to make a skeleton of it.

A case containing some human skulls, and the skeletons and skulls of various smaller animals collected by me in Ceylon, arrived at the same time; and a fourth case, containing skulls of all the non-European races now inhabiting Ceylon, including some of undoubted jungle Weddo, collected by Mr. B. Hartshorne, of Panwila, and late of Pembroke College, Oxford, who has for a long time been investigating the language and habits of this very interesting race, and will shortly publish a paper on the subject.

The shipping arrangements of all the cases except the last, and their transmission through the Custom-house, were carried out by Messrs. Green and Co., of Colombo, who most liberally gave their services free of expense in the cause of science.

H. N. MOSELEY

SUPERFLUOUS DEVELOPMENTS AND HETEROGENESIS

THE remarkable and suggestive results of experimental research obtained by Prof. Charlton Bastian, together with the no less striking arguments which he has recently put forth in the pages of the *British Medical Journal* in favour of the doctrine of Evolution, appear calculated to throw light on certain phenomena in Biology which have hitherto received but scant attention. Even if Dr. Bastian's views do not gain general acceptance, so bold an enunciation of them can scarcely fail to be productive of the very best results, since (as has ever been held by philosophers) truth is only elicited and advanced by conflict of opinion.

Not merely in the lower, but also in the higher forms of animal life the microscopist is constantly encountering anomalous appearances, structures, "bodies," &c.; some of these developments being regarded as normal, whilst others are relegated to the category of pathological products. In very many cases the mysterious organisms in question have been described as "glands;" the variable character of this system of structures affording a convenient refuge for the destitute. More astute observers, however, refuse to adopt such subterfuges, and have accordingly been satisfied either merely to note their characters without forming any definite conclusions, or they have gone only a step further by placing them within the territory of superfluous developments.

To take a few familiar instances occurring within the domain of helminthology. We have the so-called Raineayan sacs, regarded as the earliest stages of Cysticerci by their discoverer. Similar bodies were previously described as the products of muscular degeneration by Hessling. Finally, they were pronounced by Leuckart to be psorosperms. In the year 1856 I detected granular bodies in the early stage of development of the eggs of *Taniz*, respecting the nature of which I had then no means of forming any definite opinion. These were subsequently described by Weinland and Leuckart; the latter authority looking upon them as masses cast off from the primitive yolk, and thus differentiated to form an organ concerned in the production of the chitinous envelope of the egg. Then, again, Leuckart speaks of certain "croupy masses" (resulting from the enteritis produced by *Trichiniasis*) as capable of resolving themselves into psorospermia: and I have myself witnessed what I presumed to be the actual conversion of the granular and molecular contents of the eggs of *Fasciola hepatica* into amæboids. Leuckart, however, from prior and independent observation, had considered these bodies to be the parasitic coniferoid zoospores of *Chytridium*.

Undoubtedly, appearances of this varied description are very puzzling; not so much, however, in the view of determining their actual character and nature as for the correct interpretation of their true mode of origination. Perhaps, if one were not, in a measure, dominated by the preconceived idea that these last-named bodies must have sprung from invisible germs, the apparent ocular evidence to the contrary would at once be held as a sufficient explanation. Be this as it may, I may refer in this connection to some interesting facts which have recently been recorded by Profs. F. Sommer and L. Landois. To their interesting "Beiträge zur Anatomie der Plattwürmer" I shall again have occasion to allude for other purposes, but for the present I merely quote the following short passage. Speaking of structures observed in the segments or proglottides of *Bothriocephalus latus*, they say (p. 16):—

"On a level with the folds of the seminal ducts, either close to or lying between them, we observed in the majority of instances within the sexually mature segments round or oval hollow spaces from 0.055 to 0.288 m. in diameter.* Their margins were sharply defined, most of them being filled with a finely granular molecular mass; in others the contents appeared coarsely granular, highly refracting. In an especial manner carmine tintured the finely granular contents vividly red, whilst the coarse granules effected the reduction of osmic acid (*Ueberosmiumsäure*) in a very marked degree; on the other hand the reduction by the fine granules was less marked. Further research showed that these granules consisted of very minute fat particles which, since they were little affected by the direct application of ether, appear to possess an albumenoid covering capable of being slightly tintured by carmine. We did not observe any of these formations in immature joints; their number also varied much in the ripe segments; of such we counted from one

to six in a joint; other sexually mature proglottides being altogether free. They appeared especially in the neighbourhood of the lower end of the seminal duct in front and behind, where the seminal passage approaches the cistern-like seminal reservoir. We regard these formations as detached portions of the seminal canal, namely, of the larger ducts, whose contents are in a state of fatty degeneration."

Such are the facts. Are the bodies in question really pathological products, or are they not, rather, superfluous developments? It cannot be said they are necessary constituents of the parasite; and it will, perhaps, be denied that they are in any sense heterogenetically formed organisms. At all events, these cast-off bodies have a gregariniform look about them, judging from the representations given by Drs. Sommer and Landois. The expression "hollow spaces" (*Hohlräume*) is certainly rather misleading; the more so since they are rendered somewhat opaque by the crowding of their granular contents.

If it be true, as some teach, that protoplasms only beget their own kinds of protoplasm, one is at a loss to understand many of the ordinary phenomena of metamorphosis. For myself, I look upon certain of these obscure developments as the result of a law of what I term "vegetative deterioration." Under ordinary circumstances (as for example in the case of the "innovations" produced from abortive prothallia in Ferns) the law of Pangenesis ensures a repetition of parts in all respects similar to those whence the buddings have arisen; but surely it is not necessary to regard all anomalous and detached structures either as morbid products on the one hand, or as germ-begotten entities on the other. Without letting the imagination run wild, it appears to me perfectly conceivable that "bodies" of a kind more organised than Drs. Sommer's and Landois' "formations," may result from the operation of this law of degradational metamorphosis or "vegetative deterioration."

T. SPENCER COBBOLD

DR. LIVINGSTONE'S DISCOVERIES

FROM Mr. Stanley's despatches to the *New York Herald*, which, by the courtesy of the English representative of that paper, have appeared in the *Times*, we gather some important and definite information as to the exact nature of Livingstone's discoveries; and more than this, we have a full explanation of the circumstances which kept our great traveller so long out of the reach of civilisation, and of the work he still hopes to accomplish.

Mr. Stanley's account of his meeting with Livingstone is a touching one. After many delays, on the 3rd of November, 1871, he came in sight of the outlying houses of Ujiji, and, anxious to enter the African town with as much *éclat* as possible, he disposed his little band in such a manner as to form a somewhat imposing procession. At the head was borne the American flag; next came the armed escort, who were directed to discharge their firearms with as much rapidity as possible; following these were the baggage men, the horses, and asses; and in the rear of all came Mr. Stanley himself. The din of the firing aroused the inhabitants of Ujiji to the fact that strangers were approaching, and they flocked out in great crowds, filling the air with deafening shouts, and beating violently on their rude musical instruments.

As the procession entered the town Mr. Stanley observed a group of Arabs on the right, in the centre of whom was a pale-looking, grey-bearded, white man, whose fair skin contrasted with the sunburnt visages of those by whom he was surrounded. Passing from the rear of the procession to the front, the American traveller noticed the white man was clad in a red woollen jacket, and wore upon his

* About $\frac{1}{16}$ " to $\frac{1}{10}$ " Eng. measurement.—T. S. C.