nished with an excellent index. It is an entertaining and instructive book, and we wish it all success.

GEORGE J. ROMANES

LETTERS TO THE EDITOR

[*The Editor does not hold himself responsible for opinions expressed by his correspondents. Neither can he undertake to return, or to correspond with the writers of, rejected manuscripts. No notice is taken of anonymous communications.*

[*The Editor urgently requests correspondents to keep their letters as short as possible. The pressure on his space is so great that it is impossible otherwise to ensure the appearance even of communications containing interesting and novel facts.*]

Thought-Reading

BY the courtesy of Dr. G. M. Beard of New York I had the opportunity of witnessing some interesting experiments in artificial trance performed on one of his trained patients, thought-reading being one of the phases exhibited. After his discovering objects in the usual way, I used a fine copper wire about a yard in length. I wound one end round the right hand of the patient (after he was hypnotised) and then placed his wired hand against his forehead. The patient then wandered round the room in an aimless sort of manner, the wire all the time being quite slack, but the moment I attempted, however gently, to increase the tension just sufficient for him to feel it, he instantly moved off along the direction of the wire, like a horse with a rein. I subsequently tried a thicker wire. The patient stood with his face in a direction at right angles to my own; he moved straight towards the table on my left hand, and after oscillating his head sideways as if trying to find some particular spot, he finally brought his forehead slowly but with great accuracy down upon a metal disk about 1½ inches in diameter, and at a distance of about 18 inches from the edge of the table. This was exactly what I had "willed."

The different effects produced by a slack and a stiff copper wire respectively would seem to show, clearly, that the patient cannot acquire the "will" of the operator unless the connection be sufficiently rigid to communicate the involuntary muscular action of the operator, however imperceptible such action may be to the latter himself, who wills what the patient is to do.

GEORGE HENSLOW

A Gun-Signal Recorder

IN the judgment recently delivered by Mr. Mansfield on the stranding of the steamer *Britannic*, he says:—"With respect to the signals from the Hook Tower it is stated that the gunner who discharged the gun—a twenty-four pound gun—commenced firing at 1.50 a.m. on July 4, and continued firing at intervals of ten minutes till 10.10 a.m. He took the time from his watch, as his sandglasses were unserviceable; he had no light but a dark lantern in his gunhouse. Without imputing to him intentional neglect of his duty or wilful misrepresentation, it seems to the Court that he may have been less vigilant and less accurate than men who were keenly awake to the difficulties of their position, and who must have known that the safety of the ship was involved in their taking the time between the signals with scrupulous care. In his unsupported testimony the Court cannot find that the signals from the Hook Tower were fired at regular intervals of ten minutes. Looking at the importance of accuracy between the intervals of the fog-signals, the Court wish to draw attention to the statement of the gunner that he has no relief in his duty, however prolonged it may be; nor do the Court find that there is any check, mechanical or otherwise, on the gunner to insure accurate firing."

The writer would suggest that a simple recording apparatus might be made by means of a clock controlling the movement of a strip of paper, as in the Morse telegraph; this strip being divided by transverse lines into spaces representing minutes and seconds.

A diaphragm of thin sheet iron, caoutchouc, or other suitable material, connected with a metal point as in the phonograph, would then register each explosion of the gun by depressing the point on to the paper strip, and either making a pencil-mark or a perforation. Such an instrument would be a check on the accurate firing of the gun in the station where it was placed, and the production of the strip would do much to remove the uncertainty which appears to have existed in the case above cited.

Liverpool, July 30 A. G. P.

Symbolical Logic

As Mr. Venn appears to be really serious in accusing me of having misquoted him, I may as well give the whole sentence which contains the statement which he says I distorted. The complete sentence is this:—

"Take, for instance, such problems as those of which Prof. Jevons has discussed a sample under the name of Numerical Logic (*Pr. of Science*, p. 169), as any of those which play so large a part in Mr. Macfarlane's volume, or, still more, as those problems in Probability which Boole justly regarded as the crowning triumph of his system."

I certainly thought that in this sentence the last relative pronoun *which* referred to Boole's probability problems in general, but especially to that much discussed problem (sometimes called his "challenge problem") which Boole gave in illustration of what he conceived to be the superiority of his "general method" over the usual methods. It never struck me therefore that Mr. Venn would seriously accuse me of misquoting him because (in order not to inflict upon the readers of NATURE the irrelevant three-quarters of the above sentence) I represented him as saying that Boole "justly regarded *his problems in probability* as the crowning triumph of his system." What then are the problems to which Mr. Venn refers? This, I own, is not a point upon which I have "any claim to call for an answer," but I think it is a point upon which he might courteously condescend to gratify the natural curiosity of many admiring readers of his "Symbolic Logic," who (unlike me, I am afraid) cannot be suspected of any unkind wish to place him in a difficulty.

Boulogne-sur-Mer, August 2 HUGH MCCOLL

Bisected Humble-Bees

AT the end of my garden two magnificent lime-trees grow, on which bees—of specimens of which I herewith send you portions—feed at this time of the year by hundreds—by thousands. What kind of bees are they? But the following are the points on which I should like some information. Every morning I find numbers of them on the ground, helpless, behaving very much like men when they are drunk. What causes this? Next, how comes it to pass that, apparently, these helpless bees all become bisected or trisected as the specimens I send? This morning there are hundreds of portions under the trees. We have a family of "fly-catchers" in the garden—would they do it?

T. MASHEDER

The Grammar School, Ashby-de-la-Zouch, July 29

[The bees are a common species of Bombus (Humble-bees), mostly workers, and mostly bisected at the junction of thorax and abdomen. Perhaps wasps are the culprits, adopting this method in order to rob the bees of their honey-bags. We shall be glad to have information on this point.—ED.]

A New Meter for Electric Currents

IN NATURE, vol. xxiv. pp. 294–5, you notice a new meter for electric currents, giving a description which is fairly correct for a slight sketch, and attributing the invention to Mr. Edison. The invention, however, is not American, but English, and, as the inventor, I think myself entitled to whatever credit this entirely novel system may merit. My patent rights for America have been purchased of me, and the invention will be shortly in use in New York.

JOHN T. SPRAGUE

Birmingham

[Our correspondent is doubtless right in his claim. Nevertheless the invention we referred to in the brief note in question has been recently patented in this country on behalf of Mr. Edison, presumably at a later date than our correspondent's invention. We should be glad if he would kindly furnish us with the date of his English patent. We certainly meant no injustice in publishing the note.—ED.]

A POPULAR ACCOUNT OF CHAMÆLEONS[1]

II.

THE next most interesting of the animal's life processes is its change of colour. Mistakes and exaggerations as to this matter are of very old date. Aristotle believed

[1] Lecture delivered at the Zoological Gardens on July 28, 1881, by St. George Mivart, F.R.S. Continued from p. 312.

the change to be due to the inflation of the body, and we all know that in Gay's fables it is represented as changing from black to green, blue, and white. The truth is the ground colour of the animal may vary from pale yellow to light or dark green, and so from a bluish to a dark leaden colour.

It is often of a general pale yellow tint, especially at night, in the dark and when perfectly dormant. The general colour need not be uniform, but in one region of one colour, and of another colour in another region, and yellow and bluish tints may be so mixed as to produce a green appearance. The colours may also be different on the two sides of the body. Its most ordinary colour resembles that of the bark of trees or that of leaves, but very distinct and very varied markings may appear as spots or stripes of pale gray, or brown, or black, or yellow, and the stripes or series of spots may extend longitudinally or transversely. Moreover the spots may be either close or distant, and round or angular. They may be dark on a light ground, or light on a dark ground. All the changes of colour which take place take place gradually, and the spots which appear, disappear, and re-appear, are not reproduced in the same places with the exception of markings which radiate from the eye, and others on the tail and limbs.

My poor friend, the late Mr. H. N. Turner, jun., remarked[1] of a chamæleon kept by him that its general tint varied from brown or olive to bright green and yellow. When brought from the dark into lamp-light he found that the side next the light changed sooner than the other. The line of prominent tubercles in the middle of the under surface of the body remains constantly white. Mr. Turner's experiments and those of van der Hoeven seem, as was to be expected, to negative the idea that the animal can assume the colour of surrounding objects.

This faculty of colour change is not really so exceptional a phenomenon as many persons suppose. It exists in certain mollusks, and notably in the cuttle-fishes, which rival the chamæleon in their changing tints. It is also found in certain frogs and lizards, especially in the American kind, called *Sphærops*. As to fishes, Dr. Günther tells us[2]: "In many bright-shining fishes—as mackerels, mullets—the colours appear to be brightest in the time intervening between the capture of the fish and its death, a phenomenon clearly due to the pressure of the convulsively-contracted muscles on the chromatophores. External irritation readily excites the chromatophores to expand—a fact unconsciously utilised by fishermen, who, by scaling the red mullet immediately before its death, produce the desired intensity of the red colour of the skin, without which the fish would not be saleable. In trout which are kept alive in dark places, the black chromatophores are expanded, and consequently such specimens are very dark-coloured; when removed to the light they become paler almost instantaneously.

The chamæleon lays eggs, and its manner of doing so has been described by Vallisnieri, who carefully observed the actions of a female in his possession. She wandered about on the floor of her inclosure till she found a place devoid of dust or sand. There she began to scratch, and continued scratching for two days, till she excavated a depression four inches wide and six inches deep, in which she deposited thirty eggs. She then carefully covered them up, first with earth, and then with dry leaves and twigs and bits of straw.

There are now fifty known species of chamæleon, and twenty-five of them are distinguished by prominences either on the end or sides of the muzzle, or over the eyes, or on the top of the head, or on the occiput. The first twenty-five of the entire list are devoid of such prominences. Their names and the localities whence they come are as follows:—

[1] *Proc.* Zool. Soc., 1851, p. 203.
[2] See his recent magnificent work on Fishes, p. 183.

(1) *Chamæleo vulgaris* is found in Southern Spain, Northern and Southern Africa, Asia Minor, Arabia, Hindostan, and Ceylon. No other kind of chamæleon has nearly so extensive a range.

(2) The kinds called *C. lævigatus* and (3) *C. affinis* both come from Egypt or Eastern Africa. *C. Senegalensis* (4), *C. gracilis* (5), *C. granulosus* (6), *C. dilepis* (7), *C. anchietæ* (8), and *C. fasciatus* (9), all come from Western Africa. *C. cristatus* (10) and *C. Burchelli* (11) come from Fernando Po. *C. capellis* (12), *C. ventralis* (13), *C. pumilus* (14), *C. namaquensis* (15), *C. melanocephalus* (16), *C. gutturalis* (17), and *C. tæniabronchus* (18), all come from Southern Africa. The kind called *C. tigris* (19) is from the Seychelle Islands; and the two species, *C. cephalolepis* (20) and *C. pollenii* (21), are from the Comoro Islands. *C. verrucosus* (22), with *C. balteatus* (23), *C. lateralis* (24), and *C. campani* (25), are from the great island called Madagascar.

As to each of the next list a word or two must be said.

The form called *C. antimena*[1] (26) is furnished with an outgrowth flattened from above downwards, at the end of the muzzle, which is cartilaginous towards its distal end. *C. Labordi*[2] (27) has a similar process more prolonged and entirely bony. *C. superciliaris*[3] (28) has a triangular prominence over each eye. *C. pardalis*[4] (29) has a nose dilated and toothed on each side in front. In *C. globifer*[5] (30) a globular prominence projects anteriorly from each side of the end of the muzzle. *C. calyptratus*[6] (31) and *C. calcaratus*[7] (32) have each the summit of the head conically produced. In *C. cucullatus*[8] (33) a very prominent flap extends out on each side from the occiput. In *C. gularis*[9] (34) there is also a pair of occipital flaps, and the same is the case in *C. brevicornis*[10] (35), with the addition of a process on the end of the snout, covered with smooth scales. *C. Malthe*[11] (36) has a pair of slightly different occipital flaps with the addition (in the male) of an obtuse nasal prominence, which is grooved above. *C. rhinoceratus*[12] (37) has a single central elongated bony nasal prominence, but no occipital flaps. In *C. minor*[13] (38) the male has two flat, compressed, diverging nasal prominences covered with large scutes. In *C. bifurcus*[14] (39) there is a similar pair of bony processes, and also in *C. Parsoni*[15] (40). In *C. O'Shaughnessi*[16] (41) there are also two divergent, compressed, scute-covered nasal prominences. In *C. gallus*[17] (42) the nose of the male is provided with a single long conical appendage, but it is flexible and covered with short tubercles. It and the preceding twenty species also all come from Madagascar. *C. nasutus*[18] (43), from Eastern Africa, has a similar flexible protuberance. The snout of *C. montium*[19] (44) has two prominences which are veritable nasal horns horizontally projecting forwards from above the nostrils. Each is encased in a finely-annulated sheath. It comes from the Camaroon Mountains. The male of *C. Owenii*[20] (45) has no less than three such sheathed horns, one projecting from the front of each orbit, and the other from the middle of the nose. It is an inhabitant of the Island of Fernando Po. In *C. Melleri*[21] (46) the male has a single, compressed bony prominence, sharp-edged above. It comes from Eastern Africa. *C. monachus*[22] (47) has two large occipital flaps. It is an inhabitant of

[1] See Grandidier, *Ann. des Sc. Nat.*, xiv. 1872.
[2] *L.c.*
[3] *Archiv. du Mus.*, vi. Pl. XXII. Fig. 14.
[4] *L.c.* Fig. 11.
[5] Günther, *P. Z. S.* 1879, p. 149, Pl. XIII.
[6] *Archiv. du Mus.*, vi. Pl. XXII. Fig. 1.
[7] Peters, *Monatsber* Berlin, 1869, p. 445.
[8] *P. Z. S.* 1864, p. 746.
[9] Günther, *P. Z. S.*, 1879, p. 149, Pl. XII., Fig. B.
[10] *L.c.* Fig. A; and *Ann. and Mag. of Nat. Hist.*, May, 1881, p. 358.
[11] *P. Z. S.*, 1879, p. 148, Pl. XI.
[12] Gray, *P. Z. S.*, 1864, p. 478.
[13] Günther, *Ann. and Mag. Nat. Hist.*, p. 246, Pl. XIII.
[14] *Arch. du Mus.*, vi Pl. XXII. Fig. 3.
[15] *L c.*, Fig. 12.
[16] *Ann. and Mag. of Nat. Hist.*, p. 357, Pl. XIX.
[17] *Ann and Mag. Nat. Hist.*, p. 315, Pl. XVI. Fig. B.
[18] *Archiv du Mus.*, vi. Pl. XXII. Fig. 4.
[19] Günther, *P. Z. S.*, 1874, p. 442, Pl. LVI.
[20] *Archiv du Mus.*, vi. Pl. XXII. Fig. 10.
[21] Gray, *P. Z. S.*, 1864, p. 478, Pl. XXXII. Fig. 1.
[22] *P. Z. S.*, 1864, p. 470, Pl. XXXI.

the Island of Socotra. There are also the occipital flaps in *C. Petersii*[1] (48), from Eastern Africa. The two remaining chamæleons are so distinct from the foregoing that they rank as a distinct genus called *Rhampholeon*, a genus which was instituted by Dr. Günther in 1874. The first of these, *R. spectrum*[2] (49) is from the Camaroons; the second, *R. Kerstenii*[3] (50) is from Eastern Africa. Both agree and remarkably differ from all other chamæleons in having the tail short, it being only one-third the total length, or even less. Though its end is prehensile, its prehensile action must be much less perfect than that of the tails of the preceding forty-eight kinds; but this defect is compensated for by the development of a sharp tooth, or denticle, at the inner side of the base of each claw, which must give it a firmer grip. Moreover in *R. spectrum*, though not in *R. Kerstenii*, the grip is yet further aided by a spine which projects vertically from the inner, or flexor, surface of each finger or toe. In *R. spectrum* each eyebrow is produced into a flexible horn-like prominence. In *R. Kerstenii* two long processes project forwards, one over and in front of either eye.

Thus the geographical distribution of the chamæleons is very remarkable. With the single exception of the common species they are entirely confined to Africa and certain more or less adjacent islands, and exist mainly on the south of the equator. No less than twenty-one out of the fifty kinds are from Madagascar, and of the twenty-five kinds which have been enumerated as having horns or other remarkable processes on the head, no less than seventeen are from the same very interesting island, which is thus the great home of chamæleons generally, and especially of these curiously distinguished kinds. The plate-snouted (*C. antimena* and *C. Labordi*), the bony, double-horned species (*C. minor*, *C. bifurcus*, *C. Parsonii*, and *C. O'Shaughnessii*), and the lofty-helmeted (*C. calyptratus* and *C. calcaratus*) kinds are quite peculiar to Madagascar. Those with occipital lobes are found not only there, but also in Mozambique and the Island of Socotra. The Madagascar single-horned *C. rhinoceratus* is resembled by the East African *C. Melleri* and the flexible-snouted Madagascar form, *C. gallus*, is resembled by the East African *C. nasatus*. The species with true horny sheaths to their horns (*C. montium* and *C. Owenii*) are exclusively West African forms.

Fernando Po possesses three species. Two are from the Camaroons. One is an inhabitant of the Seychelle Islands, and two are from the Comoro Islands between Africa and Madagascar. Apart from the common species three kinds are from Eastern Africa, two from Egypt and Abyssinia, nine from Western Africa, and eight from Southern Africa.

Such are the leading facts with respect to chamæleons considered by themselves. Let us now consider their more significant relations to other animals.

The entire mass of animals of all kinds, from what is commonly called the animal kingdom, in contrast with and in distinction from the vegetable kingdom: this great whole is divided into certain vast groups called sub-kingdoms, and the highest of them, called the vertebrate sub-kingdom (because its members possess a spinal column), comprises ourselves, with all beasts, birds, reptiles, efts, frogs and toads, and fishes. We and beasts constitute what is called a class—the class *Mammalia*. Birds form another class—*Aves*. Reptiles (*i.e.* all tortoises, lizards, serpents, and crocodiles, with certain extinct kinds) together constitute the class *Reptilia*. The efts of all kinds, with all frogs and toads, and some other creatures, living and extinct, form the class *Batrachia*, while all fishes are grouped together in the one class *Pisces*. But these five classes are not equally distinct one from another. Birds and reptiles, batrachians and fishes go together as two sets of classes or provinces. On the province containing birds and reptiles the name *Sauropsida* has been bestowed, while the term *Ichthyopsida* has been used to denote the province which contains both Batrachians and Fishes.

The existing class of reptiles contains four orders:—(1) *Crocodilia* (crocodiles and alligators); (2) *Lacertilia* (lizards); (3) *Ophidia* (serpents); and (4) *Chelonia* (tortoises and turtles).

The order *Lacertilia* is made up of a certain number of large groups, each of which is called a family, which family is again composed of genera, while each genus consists of one, two, few or many species.

The chamæleons, as we have seen, form fifty species arranged in two genera: forty-eight species in the genus *Chamæleo*, and two in the genus *Rampholeon*. These two genera together constitute a family—a family of the order Lacertilia.

Putting aside on this occasion a certain very exceptional genus called *Hatteria*, the families of the order Lacertilia may be enumerated as follows:—the true lizards (*Lacertidæ*); the Scincs (*Scincidæ*); the Chalcidians (*Chalcidæ*); the Iguanians (*Iguanidæ*); the Geckos (*Geckotidæ*): and the Monitors (*Varanidæ*).

From all these families that of the chamæleon differs most widely. It differs from all of these:—(1) in the compressed body raised from the ground by its long limbs; (2) in its tongue; (3) in its eyes; (4) in the shape of its feet; and (5) by the form of the tail. It further differs from the Iguanians, Lacertians, Scincs, and Chalcidians, in that its body is not covered with scales.

There are certain Iguanians which present a slight resemblance to the chamæleons: such are the American *Polychrus*, and still more *Sphærops*, which has the eye covered with a granular eyelid with only a small central aperture, and has an equal facility in changing colour. These, however, are but superficial agreements, and in all essential points *Sphærops* is a true Iguanian, and in no way a chamæleon.

Prof. Parker assures us that while the chamæleon is an animal, the structure of the skull of which is "specialised to the utmost," it is nevertheless in other respects a very low form.

The answer to our question, "What is a chamæleon?" is, then, that it is a very exceptional family of the order *Lacertilia*, an order of the class Reptilian, a class which, together with birds, form the Sauropsidian province of the great vertebrate sub-kingdom of animals.

Can we gain any light as to the mode of origin of chamæleons?

The best light we can obtain as to the origin of existing forms is derived from the fossil remains of creatures nearly allied to them. In this way we have been able pretty clearly to ascertain that hog-like creatures and ruminating animals are diverging offshoots from a much more ancient, common, and intermediate type.

In this way also we have, I think, fair evidence to show that the cats are derived from creatures more or less nearly allied to the existing civets.

But the science of organic fossil remains—palæontology—has only as yet been able (so far as I am aware) to point to one relic which has been supposed to be of chamæleon nature—part of a lower jaw from Eocene deposits in North America. It would be curious if an ancient chamæleon should be discovered to have inhabited a region so distant from the home of the existing kinds as is North America. It would not however be an unparallelled fact, for the existing Old World camel was once a New World form. The true nature however of the fragmentary fossil is very doubtful, and we may therefore say that as yet we have no evidence as to the antiquity of the family. But should the fossil turn out to be really part of the jaw of a chamæleon, it would but tend to show that the group itself existed already in Eocene times; it would

[1] *P. Z. S.*, 1864, p. 470. [2] *P. Z. S.*, 1874, p. 443, Pl. LVII.
[3] Peters in von der Decken's "Reisen," iii. p. 12, Table I. Fig. 1; see also *Ann. and Mag. of Nat. Hist.*, September, 1880, p. 238.

not throw any light upon the *mode of origin* of that group.

The chamæleons have, as we have seen, their main home in Madagascar. That island is also the main home of another very exceptional group, the exceptional group of beasts called lemurs. But lemurs have much resemblance, though probably no true affinity, with apes, and the apes are a group, even more isolated perhaps than lemurs. It is as yet quite impossible to say from what root the ape order took its origin.

The same thing may be said (and a few weeks ago was said by our president in this room) respecting the cetaceans, the order, that is, of whales and porpoises. The same thing again may be said of that very exceptional order of flying beasts, the bats. The chamæleon family then is only one of many others which have this at present quite isolated character. But if we can obtain no clue as to the chamæleon's origin, can we detect any special or unexpected affinities between it and any other creatures which do not belong to its own class, the class of reptiles?

It is now very generally supposed that birds have been derived from reptiles, and there seem to have been two distinct lines of descent—the ostrich kind of birds, from extinct land reptiles called *Dinosauria* (of which the great *Iguanodon* of the Wealden formation is a type) and the other birds from extinct flying reptiles called *Pterosauria*, which had much analogy with our bats. This double origin (which I advocated ten years ago) has recently been reinforced by investigations of Prof. Vogt with respect to that extinct feathered creature of the Oolite, the *Archeopteryx*, which turns out to have many affinities with the Pterosauria.

Now the chamæleon has no resemblance either to the Dinosaurian or to the Pterosaurian reptiles, and certainly nothing could well be less bird-like in appearance or in habits than the chamæleon. The one only point of resemblance—that between its pincer-like feet and those of the parrots—is but a very incomplete one, as we have already seen. Nevertheless there is one strange and unexpected structural character already noted to which it may be interesting to revert.

In birds the lungs (unlike our own and those of beasts) are not closed bags, but communicate with air-sacs which extend far and wide within the body, and which doubtless facilitate their powers of aërial locomotion. In the most active lizards, which dart so quickly to their shelter that the eye cannot follow them, there is nothing of the kind; neither is there in those little lizards which take such long jumps with the help of their parachute-like wings, that they may be said to flit—lizards called by the absurdly formidable name of "flying dragons;" yet in the chamæleon, in spite of its sluggishness, such sacs are present, and thus render unavailing a character which might otherwise be employed to distinguish all birds from all existing reptiles.

But though neither comparative anatomy nor palæontology yet enables us to speculate profitably on the origin of the chamæleon's family, there is one feature met with in many of the species which tends to shed a certain amount of light on principles of variation, and therefore on that of specific origin generally. I refer to the circumstance that so many kinds of chamæleons develop crests, processes, or horns on the muzzle and over the eyes or on the occiput. These outgrowths are so different one from another that it is impossible to believe that they have arisen by inheritance and descent from any one peculiarity of the kind. Superciliary prominences could not give rise to nasal protuberances, or bony outgrowths to true horn-sheathed excrescences, and none of these could either be the parents or the offspring of occipital flaps.

The phenomenon is parallel to what we find in certain groups of birds, as *e.g.*, the birds of paradise, so many kinds of which develop unusual feathery outgrowths—these outgrowths being often so different in nature that they cannot be supposed to have been derived by inheritance one from another.

In such birds then we must admit (as I have long ago urged) that there exists an innate tendency to unusual outgrowths of feathers of one or another kind, and similarly we must admit that there is extant in the nature or essence of chamæleons a tendency to osseous or horny outgrowths from the head of one or of another kind. It has been suggested that these outgrowths in the males are due to the wayward fancy of female chamæleon taste. And certainly the female chamæleon, with her exceptional power of independently moving her eyes, and so simultaneously considering and accurately comparing the horns and warts of two rival swains, is unusually qualified for making a careful matrimonial choice. Seriously speaking, however, I regard this explanation as quite inadequate.

I have elsewhere[1] given my reasons for considering this explanation to be a mistaken one, but the question is far too wide to discuss to-day, suffice it to say that even if this hypothesis were correct it would but imply the presence of an innate tendency in the female to admire horny and warty prominences of certain varied kinds. The one innate tendency is as mysterious, and when deeply considered as significant as in the other.

But apart from these questions, which, however interesting they may be, are still matters of uncertain speculation, the actual structure and the unquestionable facts of the chamæleon's physiology are, as I trust you will now agree with me in saying, matters of very great interest. They offer fields as yet unexplored for careful observation and experiment. Even the most peculiar and important of all the chamæleon's actions—the emission and retraction of its tongue—are actions which, so far as I know, are not by any means clearly understood. But when to such matters of direct observation or immediate inference we add the problems to the solution of which elaborate reasoning has to be employed—reasoning based on wide knowledge of the structures of animals existing and extinct—it will, I think, be evident that the leisure of a long life might be usefully devoted to obtaining a complete and far-reaching knowledge of the natural history of that exceptional family of Lacertian reptiles, the family of the chamæleons.

THE INTERNATIONAL MEDICAL CONGRESS

THE seventh meeting of the International Medical Congress, which has just been held in London, has been remarkable from many points of view. The sudden growth of the Congress from an assembly of 600 to one of over 3000 members, the truly cosmopolitan character of the gathering, the great scientific activity displayed, the lavish private and public hospitality and marked Royal patronage conferred, have one and all marked out this meeting as a very great event. It has been the largest and most complete assembly of scientific men that this age, and therefore any age, has ever witnessed, and if the results to science should prove to be at all commensurate, it will be a very prominent event in the history of the progress of science.

The many and complicated arrangements have been admirably planned by Mr. MacCormac and his able assistant, Mr. Makins, and they have borne successfully the heavy strain of a larger number of members than was previously expected. The Congress has held six general meetings, at each of which an address has been delivered, and the more special work has been conducted in the fifteen sections among which it has been split up. Sir James Paget, as President, delivered the opening address on Wednesday last, which was characterised by his usual

[1] "Lessons from Nature," Chap. X. (Murray, 1876).