tor to those of mature age, not to beardless youths or striplings, and this rank elevates the individual above all Esquires not honourable, and above all Field-Officers not Generals or Admirals." pp. 39, 40.

We are almost ashamed of having wasted so many pages upon this Oxonian; but as he is also a reformer, we must quote his plan of reform, which has at least the merit of simplicity.

"Let the College of Physicians sit as a quorum, in every part of England, where three fellows can be assembled, to grant licenses. Let these licenses be granted without expense. Let none but English graduates practise without these licenses. If three fellows cannot be assembled monthly, in each county, to examine and to grant licenses, let one fellow and two M. Ds. of Oxford or Cambridge be a quorum. North of the Tweed, and for the colonies, let Edinburgh and Glasgow grant licenses to practise." p. 41.

V.

Philosophical Transactions of the Royal Society of London.
For the Year 1816. Part I. and II. 4to, London, 1816.

We must confess, that, as journalists, we have been very negligent in not regularly inserting such a notice of the titles, at least, of all the communications relating to our profession, which are inserted in this first of periodical works, as might at least serve the purposes of an index. In the volume before us, Sir E. Home, with laudable industry, contributes no fewer than seven papers, chiefly on his favourite subject of comparative anatomy.

No. IX.—Some account of the feet of those animals whose progressive motion can be carried on in opposition to gravity, pp. 149—156; illustrated by two engravings.

XXIII.—Further observations on the feet of animals whose progressive motion can be carried on against gravity, pp. 322, 331; illustrated by five engravings.

XXII.—Some further account of the fossil remains of an animal of which a description was given to the Society in 1814, pp. 318, 322; illustrated by four engravings.

XX.—On the formation of fat in the intestines of the tadpole, and on the use of the yolk in the formation of the embryo in the egg, pp. 301, 311.

The egg of the frog has no yolk; it consists of a substance intermediate between jelly and albumen, upon which the tadpole, as soon as it is formed, seems to feed. The progressive change of the tadpole, until it become a perfect frog, is curious.
"The spawn of the English frog was collected on the 1st of April, 1816. On the 15th, the tadpole left the egg, but the filaments or external gills were not visible, only a deep notch on each side, nearly separating the head from the body. On the 23d, the ten filaments on each side were distinct; on the 27th they disappeared. In June, the external orifice on the left side, for the water to pass off from the gills, was very distinct, but none was seen on the right. On July the 8th, the hind legs began to appear, but the toes were not separated. On the 14th of July, the hind legs were seen externally completely formed, and on opening the skin of the chest, the fore legs were equally so; but there was no external projection by which this could be known. The lungs were completely formed. On removing the intestine, there was no fat deposited on the loins. On the 16th, the contents of the intestine were voided in considerable quantity. On the 18th, the elbows of the fore legs projected under the external skin, and so much of the contents of the intestine had been voided as to give a taper form to the lower part of the body. On the 19th, the fore legs were completely disengaged, and appeared externally; the mouth had become wide like that of a frog. The tail had a notch at that part where it afterwards separates; the intestine was reduced in diameter, and to the length of that of a frog; an appearance of oil was seen on the loins. On the 23d, the tail had dropped off, leaving the projecting root. The animal had left the water and remained among the grass. Behind the intestines upon the loins were several small membranous appendages in an empty state.

"On the 28th, the root of the tail had wholly disappeared; the appendages had become more opaque."

An examination of the tadpole of the Surinan frog, from its size, permitted some circumstances to be more accurately observed.

"Upon examining the tadpole of the rana paradoxa, just when the hind feet appear externally, I found the mouth very small and nearly round, the teeth cuticular, the upper ones overlapping the under, the oesophagus, stomach, and intestine, forming one uniformly continued canal, which passed down to the lower part of the abdomen; it was bent upon itself, passed up again, and then made a great number of coils in a circular form; its coats were very firm, its capacity very small. There were three gills completely enclosed on each side, and a little way below the eye on the left side, a small round orifice, for the water, by which the gills are supplied, to pass out; but none on the right. When the tadpole is arrived at its full growth, and the hind legs are completely formed, which takes place, according to Mr Ireland's observations, in 14 days after their first appearance, the cavity of the abdomen had become exceedingly enlarged, the intestine very capacious, its coats almost as thin as cobweb; it was completely distended, through its whole extent, with a soft substance, which when burnt had the smell of hay. Behind the intestine, all along the posterior part of the abdomen, a
large quantity of fat was met with of a yellow colour, enclosed in long, thin, transparent membranous bags; no part of this fat was met with in the prior stages of the tadpole's growth. The lungs were completely formed.

"When the mouth of the tadpole has been changed into that of the frog, and the fore legs completely protruded, but the tail remaining entire, which happens 21 days after the last mentioned change, the large coils of intestine were found contracted into a canal one fourth of its original length; the coats had become as firm as those of an artery, the external surface was corrugated, and the canal empty. The stomach had become a distinct cavity, and there was a contraction, where it terminates in the intestine. All these parts were embedded in fat, which filled every part of the abdomen, not occupied by the liver, which had acquired a large size. The lungs were filled with air, and the gills had entirely disappeared.

"When the tail has dropped off, leaving the projecting root, which takes place in seven days more, the only internal change met with was, that no fat whatever was found in the cavity of the abdomen." p. 303, 4.

From these facts Sir Everard concludes rather hastily, that such unusual length of intestine is required to admit of so large a quantity of fat being formed in so short a time, and therefore that the intestine is the laboratory in which the fat is formed.

The second part of this paper contains also some good observations, though not very well connected; but we do not quarrel with this haste to communicate to others every thing one hears or sees, as much information is lost by those of an opposite turn of mind, withholding it from the public until it shall be rendered as perfect as they think it can be made, which of course seldom happens.

The ova of the frog, of the shell-snail, both of those that have a shell, and those that have only a strong membranous covering, of the lobster, cray-fish, prawn, sea cray-fish, and crab have no yelk, and they contain no oil; the ova of salmon and pike have no yelk, but contain a little portion of oil; the ova of the cartilaginous fishes, of the lizard and snake, have, like the egg of the hen, a regularly formed yelk, which consists principally and essentially, according to Mr Hatchett, of a butyraceous oil, combined with a small proportion of albumen. From these facts Sir Everard concludes, that in all ova, the embryos of which have bones, there is a certain portion of oil, and in those whose embryos consist entirely of soft parts, there is none:

"This conclusion is much strengthened by the peculiarity, which it has been my object in this paper to point out, of the tadpole laying up a magazine of fat before the metamorphosis into a frog takes
place; it is, therefore, rendered probable, that a certain portion of oil is necessary for the formation of bone, and that the proportion in different ova corresponds with the greater or less degree of hardness of the bones of the fetus.” p. 310.

We wish Sir Everard had prosecuted this investigation, and informed us to what store of fat the bones of the embryo of man and other mammalia owe their hardness, and whence this fat is obtained?

XII.—Experiments and Observations to prove, that the beneficial effects of many medicines are produced through the medium of the circulating blood, more particularly that of the Colchicum autumnale upon the gout. pp. 257, 262.

XIII.—An appendix to the preceding paper. pp. 262, 265.

It is much to be regretted, that medical men should so often transgress the rules of sound logic in drawing inductions, and that they should adopt so loosely the statements from which their conclusions are drawn. A remarkable instance of both obtruded itself upon our notice in the introduction to this paper.

“"For the cure of the gout,” says the Honourable Baronet, “the eau medicinale of Husson has been most fortunately discovered to be a specific remedy, and it is now ascertained, by experiments on different people, that a vinous infusion of the Colchicum autumnale, or meadow saffron, is equally so, and therefore the two medicines must be considered as the same.”

Here we have a conclusion without a major proposition; but not only is the conclusion illogical, but the two minor propositions are false.

The eau medicinale of Husson is not a specific remedy for the cure of gout.

A vinous infusion of the Colchicum autumnale is not a specific remedy for the cure of gout.

These two medicines are not the same.

For satisfactory proof of our negative assertions, we refer to Dr Scudamore’s treatise, noticed in our last number. At the same time, we have no doubt of the truth of the individual facts asserted by Sir Everard, regarding the action of these remedies upon himself.

As to the observation and experiments themselves, they consist in an account of the effects of 60 drops of the eau medicinale on the author himself, when under the influence of a violent fit of the gout, and the history of three experiments, in one of which 60 drops of the vinous infusion of colchicum (made by infusing two pounds of the fresh roots in 24 ounces of sherry wine, in a gentle heat, for six days, the spirit being previously carried off by heat,) were given to a dog; and in the others it
was injected into the jugular vein, in the first in the dose of 30 drops, diluted with a dram of water, and in the other in the dose of 160 drops. The smaller dose produced a tremulous motion of the muscles and fluttering of the pulse, with some nausea. In 14 minutes the pulse increased in frequency, from 140 to 180 in the minute, but became intermittent. In four hours it still intermitted, but had fallen in frequency to 120, and was of natural strength. In seven hours the pulse was in every respect natural; the dog had a natural stool, and appeared in perfect health. The larger dose proved fatal at the end of five hours, after having produced, first, loss of voluntary motion, then tremors and great debility, with nausea, vomiting, and purging, the pulse being also rendered irregular and weak, beating, at the end of 10 minutes, 84 in the minute; of 20 minutes, 60; in an hour 115, and in two hours 150; the inspirations varying in like manner, being, in 10 minutes, 40 in the minute, which is the natural number; in 20 minutes 30, and 1½ hour 54.

"On opening the body, the stomach contained mucus tinged with blood, and its internal membrane was inflamed; the duodenum had its internal surface universally inflamed, the same appearance in a less degree was met with in the jejunium and ilium, and more strongly marked in the colon than in the ilium." p. 264.

These experiments are sufficiently satisfactory as to the action of colchicum, but the importance attached to them by their author is perfectly ridiculous.

"If these observations shall be confirmed, they must lead us to conclude, that the different kinds of substances, which produce specific diseases, are first carried into the circulation, in the same manner as mineral and animal poisons, and that the medicines by which they are acted upon, go through the same course, before they produce their beneficial effects; a material step will thus be gained in the consideration of diseases, and the modes of treating them." p. 261.

Now we must confess, that we are at a loss to discover in what this material step consists. Is it in the conclusion, that specific diseases, and their specific remedies, operate through the medium of the circulation? Or is it in the fact, that poisonous substances, such as colchicum, act in the same way, but more speedily, when injected into a vein, than when introduced into the stomach? As far as we can judge, Sir Everard means to give the merit of the latter discovery to his father-in-law, and to claim the former to himself.

"That other medicines can be received into the circulation, and, as soon as they arrive there, produce their effects upon different parts of the body, is proved by experiments made by the late Mr Hunter,
although he had no idea of their being usually carried there before they produce the different actions so well known to follow their exhibition by the mouth. He found that infusions of the following substances received into the circulation by the jugular vein, immediately produced the same effects which more slowly follow their being taken by the mouth. Infusion of opium brought on drowsiness. Infusion of ipecacuanha, vomiting. Jalap, vomiting and purging. Infusion of rhubarb, a profuse flow of urine. These effects ceased in a few hours, and appeared to have in no respect injured the animal's health."

p. 258.

We have the charity to hope that the sentence just quoted was written in ignorance; and yet it is a strange thing, that a vice-president of the Royal Society of London should be ignorant, that it was not reserved for Mr Hunter to prove, that medicines injected into a vein, immediately produced the same effects which more slowly follow their being taken by the mouth; or for himself to draw the inference, that they are usually carried into the circulation before they produce the different actions which follow their exhibition by the mouth. Not to mention the hundreds of experiments made by Orfila, for the very purpose of ascertaining whether each individual poison was or was not absorbed and carried into the circulation, before it produced its effects, of which Sir Everard might be perhaps really ignorant, when he thought he had made so great a discovery in the knowledge of diseases, and their mode of treatment; the opinion, that medicines taken by the mouth enter the circulation before they act, is an ancient and a common opinion. Haller, in order to prove that absorption takes place from the stomach, says, "Ostensum est, vim venenorum tunc potissimum operari, quando in ventriculo haerent, etiam belladonnae, opii, cicuta, oenanthes succo virosa." Haller believes the absorption even to commence in the mouth. "In oleum nicotianae in os felis instillatum, animalculum necat, totumque corpore, etiam cor, odorem veneni retinet, argumento, in venas suisse resumtum."

p. 63.

Nor is Mr Hunter better entitled to the discovery which seems to be inscribed to him, for Haller occupies no less than six pages of his immortal work to narrate the results of similar experiments made before he wrote, and subjoins above fifty references to different authors; but though we may conceive, that Sir Everard may not be in the habit of consulting so obsolete a

* Elementa Physiologicæ, Vol. VI. p. 357, 4to, Berne, 1764.
† Vol. I. p. 226—232.
work as that of the learned President of the Royal Society of Gottingen, or so heavy a publication as the Repertorium of Ploucquet, where he would have found five long closely printed columns of references on this subject; we cannot conceal our astonishment, that he should be so ignorant of the history of the Royal Society of London, of which he has the honour to be a vice-president, as not to know, that, shortly after its foundation, the Society promoted the performance of experiments of this kind; and that considerable pains were even taken to make good the claim of some of its own members to the invention of injecting liquors into the veins of animals, as well as of transfixing blood from one animal into another, which is a modification of the same experiment. Robert Boyle was the first who published an account of "Experiments of conveying liquid poisons immediately into the mass of blood." * Mr Oldenburg then gave "an Account of the rise and attempts of a way to convey liquors immediately into the mass of blood." † Then we have "an Account of some experiments of injecting liquors into the veins of animals, lately made in Italy by Signior Fracassati, Professor of Anatomy at Pisa." ‡ In No. 30, there is an account of injecting medicated liquors into the veins, together with the considerable cures performed thereby, by Dr Fabrius of Dantzic. § Other experiments of the sam kind, made at the same place by Dr Smith, are mentioned in No. 39. || But the most distinct account of the origin of the discovery is in No. 35, by Dr Timothy Clarck, one of his Majesty's physicians in ordinary. ¶

* Some Considerations touching the usefulness of Experimental Natural Philosophy. By the Honourable Robert Boyle, Esq. F.R.S. 2d edition, 4to. Oxford, 1664. Vol. II. p. 33.
† Philosophical Transactions, No. 7, December 4, 1665. Vol. I. p. 128.
‡ Do. No. 27, September 1667. Vol. II. p. 490.
§ Do. No. 39, December 9, 1667. Vol. II. p. 564.
|| Do. No. 39, September 21, 1668. Vol. III. p. 766.
¶ Do. No. 35, May 18, 1668. Vol. II. p. 677.
The controversy about the discovery of the transfusion of blood from one animal into another, and into man, is noticed, and sometimes at great length, in Nos. 19, 20, 22, 25, 28, 30, 32, 36, 37, 42, and 54.

No. XXI. On the structure of the crystalline lens in fishes and quadrupeds, as ascertained by its action on polarised light. By David Brewster, LL.D. &c. In this paper the ingenious author proves, that the crystalline lens in fishes is not symmetrical and that the variations of density in its structure correspond to the diameter which forms the axis of vision.

No. VI. Some observations and experiments made on the Torpedo of the Cape of Good Hope in 1812. By John T.* Todd, late surgeon of his Majesty's ship Lion.

We quote the conclusions as drawn by the author.

1. That the electrical discharge of this animal is in every respect a vital action, being dependent on the life of the animal, and having a relation to the degree of life and to the degree of perfection of structure of the electrical organs.

2. That the action of the electrical organs is perfectly voluntary.

3. That frequent action of the electrical organs is injurious to the life of the animal; and, if continued, deprives the animal of it. Is this only an instance of a law common to all animals, that by long-continued voluntary action they are deprived of life? Whence is the cause of the rapidity with which it takes place in this instance? Or is it owing to the re-action of the shock on the animal?

4. That those animals, in which the nerves of the electrical organs are intersected, lose the power of communicating the shock, but appear more vivacious, and live longer than those in which this change has not been produced, and in which this power is exerted. Is the loss of the power of communicating the shock to be attributed to the loss of voluntary power over the organ? Does this fact bear any analogy to the effects produced by castration in animals?

5. That the possession of one organ only is sufficient to produce the shock.

6. That the perfect state of all the nerves of the electrical organs is not necessary to produce the shock.

And, 7. From the whole it may be concluded, that a more intimate relation exists between the nervous system and electrical organs of the torpedo, both as to structure and functions, than between the same and any organs of any animal with which we are acquainted. And this is particularly shown, 1st, By the large proportion of nerves supplied to the electrical organs; and, 2d, By the relation of the action of the electrical organs to the life of the animal, and vice versa. pp. 125, 126.