ABSTRACT OF LECTURES

ON THE

STRUCTURE OF THE SKELETON IN THE SAUROPSIDA.

*Delivered at the Royal College of Surgeons of England.*BY W. K. PARKER, F.R.S.,
Hunterian Professor of Anatomy in the College.LECTURE I.—THE PRINCIPAL POINTS IN THE CLASSIFICATION
AND DEVELOPMENT OF THE SAUROPSIDA.

THE term Sauropsida is applied to one of the primary divisions of the vertebrata, and includes two classes—namely, the true reptiles and the birds. This group is apparently composed of very diverse types; yet its members have, nevertheless, a large number of most important characters in common, by which they are distinguished from the types beneath them (Ichthyopsida), and from those above them (the Mammalia). Professor Huxley has given an enumeration of the principal points in which birds and reptiles agree with one another, and differ from the mammalia, from which the following is modified. They are devoid of hair; the centra of their vertebrae have no epiphyses; their skulls have a single occipital condyle; the proötic bone either remains distinct throughout life, or unites with the epiotic and opisthotic after they have become ankylosed with the superoccipital and exoccipital. The counterpart of the malleus is not subservient to the function of hearing, and the counterpart of the incus is ossified continuously with the stapes. The mandible is connected with the skull by the intermediation of a quadrate bone, which represents the main part of the malleus of mammalia. Each ramus of the mandible is composed of a number of separate ossifications, which may amount to as many as six. Of these, the articulo-meckelian rod corresponds to the primary processus gracilis of mammalia. The apparent ankle-joint is situated not between the tibia and the astragalus, as in man and the mammalia, but between the proximal and distal divisions of the tarsus. The brain is devoid of any corpus callosum. The heart is provided with two aortic arches: if only one remain, it is the right; whereas, in the mammalia, it is the left which is developed. The red blood-corpuscles are oval and nucleated. The cavities of the thorax and abdomen are never separated by a complete diaphragm. The allantois, which is highly vascular, is very large, and envelops the embryo; but no villi for placental connection with the parent are developed upon it. There are no mammary glands. The nasal and auditory labyrinths are simple, as compared with those of the mammalia.

The principal characters in which the sauropsida differ from the fishes and the batrachians, the groups below them, are these. Their eggs have generally a much larger amount of food-yolk; they develop an amnion and an allantois. The visceral clefts are but little developed, and they never possess gills. The chondrocranium is more feebly developed, but the existing bones are much more specialised. The occipital condyle is single, whereas in the amphibia it is double, as in the mammalia: indicating that the mammalia have sprung from a parent stem below the sauropsida. The spinal column is much more perfect. When the sternum exists, it is connected with the spinal column by means of complete vertebral and sternal ribs. The shoulder-girdle, when perfect, has three separately developed clavicular bones.

The sauropsida, as a group, are naturally divided into two classes—viz., the reptiles and the birds. The differences between these two classes may be shortly stated thus.

In the reptiles, the blood is cold; the currents of venous and arterial blood are mixed, either in the heart or at the orifices of the aortic and pulmonary trunks; there are always two aortic arches; the corpora bigemina lie on the upper surface of the brain; the exoskeleton is composed of only horny scales or bony scutes; the faces of the centra are never cylindrical. The sternum, if developed, is rhomboidal, and is never properly ossified, and may have backward prolongations with which the posterior ribs articulate. The interclavicle, when present, does not coalesce with the clavicle. The manus, when present, contains more than three digits, and the digits of the pes are not fewer than three. The metatarsal bones are not ankylosed together, nor with the distal tarsal bones. The ilium has a very slight antero-posterior extension, and the pubes and ischia unite respectively below. The sacral vertebrae have expanded ribs, to which the ilia are attached.

In the birds, the blood is hot; the venous and arterial blood only

communicate through the capillaries; only the right aortic arch is present; the corpora bigemina lie at the sides of the brain; the exoskeleton is composed mainly of feathers. The faces of the cervical, and generally of the dorsal, vertebrae are cylindroidal. The sternum is thoroughly ossified, and there are no rib-bearing backward prolongations. As a rule, there are both interclavicles and clavicles united to form the furcula. The manus never contains more than two digits which have claws; and, as a rule, there are only two carpal bones. The three principal metacarpal bones are ankylosed together, and with the distal tarsal bone, and the astragalus ankyloses with the tibia. The ilium is greatly developed antero-posteriorly. The ischia and pubes proper do not unite in a symphysis below. The true sacral vertebrae have no ribs intervening between them and the ilium. The tail, as a rule, is aborted.

LECTURE II.—THE DEVELOPMENT OF THE SAUROPSIDA.

The chief points in the early development of the Sauropsida correspond accurately with each other in all the known types that have been examined. The first thing to be remarked is, that they are all oviparous. The egg is large, contains much food-yolk, and is invested by a more or less calcified shell. The yolk undergoes only partial segmentation; the egg is therefore meroblastic. The first external appearance of the embryo is in the form of a shallow groove—the medullary groove—which extends along the axis of the now pyriform blastoderm. A transverse section through the body-region at this stage shows that the three layers of the blastoderm—namely, the epiblast, hypoblast, and mesoblast—are now fully established. In the region of the medullary groove, the epiblast is thickening to give rise to the spinal cord and brain; the remainder of it goes to form the epidermis. The hypoblast, which eventually gives rise to the whole of the epithelium of the alimentary canal and appended glands, is seen as a single row of somewhat oval cells, except in the centre line, where it thickens, to give rise to a solid rod, which becomes detached from it very early, and forms the notochord. A solid mass of mesoblastic cells lies on each side of the notochord. These cells are first beginnings of the skeleton, muscles, cutis vera, kidneys, generative organs, etc. The first segmentation is caused by the breaking up of the mesoblast into a series of cubical masses—the so-called protovertebrae, or, better, mesoblastic somites, lying on each side of the medullary groove. This process begins in the region of the neck, and extends gradually backwards, and forwards as far as the head. Those mesoblastic somites do not correspond with the vertebrae; the latter not being formed till much later, and alternating with them. The process of development just described in the sauropsida corresponds exactly with what takes place in the mammalia, and in man himself.

ON THE VALUE OF WASHING OUT THE
STOMACH IN THE TREATMENT OF
DILATATION OF THAT ORGAN.*

BY JAMES RUSSELL, M.D., F.R.C.P.

It is not often that so good an opportunity is afforded of demonstrating the value of this measure, as occurred in our present case. The circumstances under which contraction of the pylorus more generally occurs involve disease of so grave a character, as to preclude the hope of gaining full advantage from any remedy we may employ. It was not so with our patient. The case, of itself, is one of much interest; it covers a period of twenty years. It is apparently an instance of contracted pylorus, occurring as a remote consequence of abscess in or near the liver, itself probably the result of gastric or duodenal ulcer. The benefit which the method of treatment I am now recommending is able to confer, was remarkably illustrated in this patient. The principle on which it proceeds is simply to preserve the food taken into the stomach in a state of purity, by putting an end to the putrefactive process which had been previously at work. We employed no other means; but, from the day on which the stomach was cleansed by the washing it received, and the freshly supplied food was preserved in a condition to act as aliment to the system, flesh was regained with marvellous rapidity, and health was completely re-established. Moreover, this occurred on two separate occasions.

The case is typical of what occurs in all cases of dilated stomach, whether from mechanical obstruction or from perverted function. A seething mass of fermenting matter lies within the stomach, at a temperature of 100°, ready to hurry every added portion into the same

* Part of a Clinical Lecture delivered at the Birmingham General Hospital. I may refer to a paper on the same subject published in the JOURNAL, a few months ago, by Dr. Clifford Allbutt.

destructive process, and thus to deprive it of every nutrient property. Fermentation is thus perpetually renewed, fresh gases are evolved, the cavity of the organ is kept distended, and thus dilatation continually increases; whilst the body is starved, the disease is augmented in an increasing ratio. Now, you will easily perceive that the circumstances which bring into operation the principle, which I have stated to lie at the foundation of all forms of gastric dilatation, are not limited to instances of mechanical obstruction. Given any set of circumstances in which food remains in the stomach imperfectly acted upon by the digestive ferments, and you have present the conditions for producing dilatation of the organ. Thus, many instances of so-called indigestion, or of recurring "bilious attacks", really involve the elements of this disease, though, happily, not often passing beyond the initiatory period. Deficiency in the production of the gastric juices, on the one hand; habitual overloading of the stomach, or the ingestion of masses of food which the fluids of the stomach cannot penetrate, on the other; or, again, the use of food already decomposing, or so saturated with fatty matter as not to mix with the digestive juices, will point to a large group of cases involving the principle to which I have referred. Various forms of impaired health, constitutional, or the remnants of acute disease, in which secreting force is lessened, or the materials are wanting; erroneous dietetics as to quantity as well as quality; imperfect mastication from habit or misfortune—cover a variety of causes connected with daily life. Once the condition of putrefaction or fermentation is set up, other circumstances follow and hasten the process of dilatation; above all, a state of low inflammation is established in the walls of the stomach, in consequence of the abnormal matters which are produced by the abnormal chemical action; the fatty and other acids; the gases, etc., whose presence is so clearly attested by the chief symptom of which the patient will complain, the gastric pains, the heartburn, the fulness, the eructation, etc.; by this inflammation the muscular fibres of the stomach are weakened, and offer diminished resistance to distension, and mucus is secreted which acts as a fresh ferment for putrefaction. Thus, you will see that every consideration points to the one indication, which, in one of its forms, is well illustrated by the case I now narrate. You will, of course, understand that the mechanical method of emptying the stomach, which was employed in the present instance, applies only to the more serious forms of the disease. For the milder forms, and for the early stages, when dilatation has not been established, a very different class of remedies is required. I do not now consider these, as it is with the principle only I have to do. Only let me say that, among the remedies to be proposed, preventive measures to remove the cause are of the first importance, and can only be directed by a knowledge of the abnormal conditions in which the malady originates.

A man, aged 50, of highly respectable character, began to suffer from pain in the right hypochondrium twenty years ago; it was chiefly produced by the presence of food, so that he avoided eating. He then vomited, or rather eructated, clear fluid; and in process of time began to throw up his food about three hours after a meal. He lost flesh considerably, and had to leave work. These symptoms persisted, with varying severity, through six years; when one night, without any further change having occurred of which he was sensible, he was awakened by something giving way within him in the hepatic region, at the inner border of the costal arch; and a quarter of an hour afterwards, he rejected, without effort, about three pints of "thick, sticky, greenish" pus. Regularly for the next month, on awaking in the morning, he rejected about half a pint of the same matter, "of the colour of yolk of egg", and remained free during the rest of the day. My friend Dr. Underhill, who attended him, has been good enough to confirm the patient's description of the serious nature of the attack.

At the end of a month, the discharge began to lessen; but it continued for nine weeks longer in smaller quantity.

Two years later, the patient had a temporary return of the pain.

During the last two or three years, the same symptoms have returned, with still greater severity; one paroxysm of pain, eighteen months ago, Dr. Arthur Underhill tells me, had all the severity of hepatic colic. The stomach dilated, and, Dr. Underhill tells me, was often visible through the abdominal wall. After one of these attacks, the man threw up a large quantity of blood.

The patient entered the Birmingham General Hospital on June 16th, 1879. The stomach then reached half-way between the navel and pubes; sarcinous matter was vomited. The man was thin, but not cachectic; and there was no other physical sign of disease in the chest or abdomen.

On June 20th, washing out the stomach by means of the syphon-tube was commenced, and was continued daily, the patient falling into the use of the tube with great facility. The food was at first milk; but solids soon became necessary, in order to avoid keeping up the dis-

tension of the stomach, as well as for other obvious reasons. Solid food was given in the morning, immediately after cleansing, to gain the whole day for digestion; and with it was administered pepsine, with nitric acid and liquor strychnic. From this day, amendment began. At admission, the patient weighed 114 pounds (his original weight had exceeded 168 pounds); on leaving the hospital, on September 4th, he weighed 150½ pounds, and had returned to ordinary diet.

It is noteworthy that, through his residence in hospital, his bowels acted quite regularly, and that the stools were of perfectly natural quality. A considerable deposit of fat upon the omentum, which took place with renewed nutrition, prevented our ascertaining the exact dimensions of the stomach.

When at home, however, he presumed too much on his improved condition, and neglected to wash out his stomach. He returned on November 24th, with renewal of all his former symptoms, and with his weight reduced again to 116 pounds; the distension of the stomach had somewhat increased. The same treatment was again employed, and was attended with the same fortunate results. He left the hospital on December 20th, with restored health.

On February 22nd of last year, he made his appearance, apparently quite well, and not having used the syphon for a month. He weighed 154 pounds. Since this date, however, fresh symptoms have set in, which do not fall within the purpose of my present remarks, but, I fear, are of evil augury.

THE CROTON-OIL TREATMENT OF TINEA TONSURANS.

By J. MAGEE FINNY, M.D. Dub., L.K.Q.C.P.,

Visiting Clinical Physician and Dermatologist to the City of Dublin Hospital.

THE intractable nature of chronic general ringworm of the hairy scalp, and its resistance to all ordinary medication, is a subject not sufficiently recognised by the profession. Dr. Alder Smith, in his admirable papers on the subject published last year, did good work in giving prominence to the frequency of the disease and its tendency to escape detection when diffused and chronic; but I am convinced that the difficulties in treating these cases can never be fully realised except after some practical experience.

I have been frequently consulted by parents and guardians about children with chronic ringworm of eighteen months' or two years' standing. The story told is nearly always the same: that the child was either sent home from or refused admission into school because of ringworm; that medical advice was sought, and, after three months or so, the disease was pronounced cured, and the child returned to school; but that within a short time the disease seemed to break out again, and necessitated the child's removal, etc. The amount of personal inconvenience and disappointment, as well as of pecuniary expense and domestic disarrangements, to which such cases give rise, can hardly be estimated.

Now such cases are by no means uncommon, and they cast upon the profession an opprobrium not altogether undeserved. Any attempt, therefore, to remove this blot, and to establish sound principles of treatment for so troublesome a disease, deserves all attention.

For the last four years, since my attention was directed to the croton-oil treatment by an article which caught my eye in the *Jahresbericht* for 1876, I have employed it in some very aggravated cases, which had resisted all other means, and with great success. The cases for its application must be selected, as an indiscriminate use of so powerful a remedy will not only injure the scalp permanently, but bring unmerited discredit on a most useful means of rapid cure.

Dis to the practical and sound suggestions as to its use made by Dr. Liveing in the *JOURNAL* of February 12th I can add nothing, as I fully endorse all that he says on the subject; and, as my practice has been almost identical with his in this respect, if I make any exception to this note of general approval, it would be to extend the rule as to the age of the child in whom it may be used with safety; for I have treated successfully cases between the ages of five and eight; and a French writer, to whom I will shortly more fully refer, has employed it in children between two and five years of age.

The method of application which I have practised is that of which Dr. Liveing speaks; namely, rubbing in the croton-oil by means of a stiff brush to the spot or spots of greatest severity; taking care not to use too much, so that neither may baldness be produced by destruction of the hair-follicles, nor any of the oil run down and irritate neighbouring parts.

Dr. Alder Smith, who, of English writers, first prominently advanced the benefits of croton-oil in ringworm, suggests it in the form of a liniment. This I have not used, and therefore cannot speak of its