

'New extemporaneous process for the production of Hydrocyanic Acid for Medical Use,' by R. D. Thomson, M.D.

The importance of prussic acid as a remedial agent, has induced the author to bestow much attention upon the production of this acid, so as to obtain it always of uniform strength. Having submitted to trial all the processes which have been recommended in this country, for the formation of prussic acid, the author was satisfied that no one of them afforded an acid of always uniform strength. The process recommended by Dr. Clark, of Aberdeen, was superior to every other, but an objection to his process was the great difficulty of procuring pure cyanide of potassium. The author believes the following process to be less liable to objection than any at present used. The first step consists in forming a pure cyanide of lead. This object may be effected in various ways, either by precipitating acetate of lead by hydrocyanic acid, as prepared from the ferrocyanide of potassium, and sulphuric acid, in a stoppered bottle, or by distilling the mixed materials into a Wolf's bottle, containing a solution of acetate of lead. In either case a definite compound of cyanogen and lead will be obtained, which is to be carefully washed and gently heated. The next step in the process consists in decomposing it, by means of sulphuric acid. In order to obtain an acid of the strength of the *Acidum Hydrocyanicum dilutum* of the London Pharmacopœia, or containing about two per cent. of absolute acid, the following formula is recommended:—

43.36 grains of cyanide of lead.

2 fluid drachms of dilute sulphuric acid, London Pharmacopœia.

6 fluid drachms of pure distilled water.

Introduce the cyanide of lead into a stoppered bottle; mix the acid and water in a glass vessel, allow the mixture to cool, and then pour it upon the cyanide of lead. Close the stopper, and agitate the fluid and salt together. After standing for some time, pour off the supernatant liquor from the precipitated sulphate of lead, and preserve it in a stoppered bottle. This formula is founded upon the circumstance that the dilute sulphuric acid of the London Pharmacopœia contains in each fluid drachm about 9.5 grains of oil of vitriol—

(S O<sub>3</sub> H O).

2 drachms will therefore contain 19 grains of oil of vitriol. The quantity required for saturating 43.36 grains of cyanide of lead is only 17.4 grains, but the small excess is useful in preserving the acid.

#### SECTION C.—GEOLOGY AND PHYSICAL GEOGRAPHY.

Prof. OWEN communicated the second and concluding portion of his 'Report on British Fossil Reptiles.'—After some prefatory observations on the general nature and affinities of the recent and extinct reptilia, and the parts of the organization of the latter which by their modifications afforded the best character for their determination, the author proceeded to give a recapitulation of the leading peculiarities of the Enaliosauri, which formed the subject of the first part of his Report; and a brief summary of the results of the labours of previous geologists and anatomists, in the field which the second part of his Report had led him to explore. The first section of the Report was devoted to a description of a large reptile, the type of a new genus, to which the name *Pliosaurus* was given, and which formed the link connecting the *Plesiosaurus* with the *Crocodyl* family. The most conspicuous character of this genus consists in the cervical vertebrae, which are considerably shorter than those of the dorsal region: in this respect it differs from all recent Saurians, the vertebrae of which are characterized by retaining the same length throughout. From this cause the neck of the *Pliosaurus* is short, compared with that of the *Plesiosaurus*, and approaches the condition of that region in the *Ichthyosaurus*. The more *Crocodyl* proportions of the teeth also distinguish it from the *Plesiosaurus*, which in other respects it strikingly resembles. Remains of it have been found in the Kimmeridge clay of Market Rasen, Weymouth, and Shotover. From differences in the relative proportions of these bones, Prof. Owen considers them to have belonged to two distinct species of *Pliosaurus*. The remains of the Saurians of the *Crocodyl* family, which complete the transition from the Enaliosaurians to the terres-

trial Lizards, were next noticed. The Report included descriptions of the fossil *Crocodyl* in the British formations below the eocene tertiary strata to the oolite inclusive; and it was observed, that the extinct species deviated from the organic type of the existing *Crocodyl* in proportion as their remains occurred in strata geologically more remote from the present time. Not any of the species were identical with those now known to exist, and the modifications of structure in which they differed, were much more considerable than any which distinguish the skeletons of the existing species from each other. The extinct species, agreeing with the present *Crocodyl* in possessing the ball and socket articulation of the vertebrae, in which the cavity is on the fore part, were first described. Of these, the *Crocodyl Toliapicus* is found in the London clay of Bracklesham, at Sheppey, and in beds of sand underlying the red crag at Kyson. The *Crocodyl cultridens* of the Wealden formation Prof. Owen now considered subgenerically different from the *Crocodyl*, and proposed for it the name of *Suchosaurus*. *Goniopholis crassidens*, another species from the Wealden, was described by Prof. Owen as more completely mailed than any of the *Crocodyl* family; its remains occur in the Tilgate Forest and near Battle Abbey, and in the Purbeck limestone at Swanage. The next family of extinct *Crocodyl* considered by Prof. Owen, are characterized by the biconcave structure of the vertebrae. Remains of the first of these, *Teleosaurus Chapmani*, are abundant in the lias of the Yorkshire coast; and *T. Cadonensis*, which abounds in the oolitic formations near Caen, in Normandy, also occurs in the oolite near Woodstock, and at Stonesfield. Remains of two other species were noticed. The second genus, *Steneosaurus*, distinguished from the last by the sub-terminal position of the nostril, is from the Kimmeridge clay at Shotover, and from the oolite of Stonesfield. One of the most interesting specimens, exhibiting the form of the brain in a cast of that part, is in the Woodwardian collection at Cambridge. A third division was for the first time described as occurring in British strata, possessing the ball and socket articulation of the vertebrae, but with the position reversed, to which the name *Streptospondylus* has been given by Von Meyer. It has been found in the lias near Whitby, and the oolite near Chipping Norton. Prof. Owen next proceeded to describe the remains of some gigantic Saurians, ranging from the greensand to the oolite, and rivalling the modern whales in bulk, may be presumed to have been of strictly aquatic, and probably of marine habits. They possess the biconcave structure of the vertebrae, and the long bones show no trace of a medullary cavity. Of the first of these, named by Prof. Owen *Cetiosaurus*, (described in report of Proc. Geol. Soc.), the vertebra and other bones, found in the lower oolite of Chipping Norton, belonged probably to an individual forty feet in length. Mr. Owen has assigned to this species the name of *C. hypoolithicus*; and to another species the name of *C. epioolithicus*, remains of which, including a vertebra eight inches in length of body, and nine inches in transverse diameter, occurs in the Yorkshire oolite at White Nab. The ninth section of the Report was devoted to the description of a large marine Saurian, teeth of which were frequent in the chalk of Barnwell, and in Sussex, in the Folkstone gale, and the lower greensand near Maidstone. From the structure of the teeth, Prof. Owen had assigned to it in his 'Odontography' the name of *Polyptychodon*. Several bones of a gigantic Saurian, discovered by Mr. Mackeson in the greensand quarries near Hythe, were considered as probably belonging to the same genus. *Mosasaurus*—of this genus only a few vertebrae have been found in the English chalk formation. Teeth, resembling those of the *Mosasaurus*, but differing in the elliptic form of the base of the crown in a transverse section, have been found in the chalk of Norfolk, and were described by the generic appellation *Leiodon*. The Report next proceeded to the account of the extinct species, which manifested, in the enduring parts of their organization, an intimate relationship with the numerous and varied tribes of the smaller and lower organized Saurians of the present epoch, to which the terms *Lacertians*, or *Squamate Sauria*, were applied. And Prof. Owen observed, that in this as in the foregoing divisions of the Saurian order, the ancient world possessed very singular and also very gigantic species, which have now

utterly perished, and have given place to carnivorous and herbivorous quadrupeds of more active habits and a higher organization. The first fossils noticed were referred to a small genus of *Lacertians* from the Chalk formation in Cambridge and Maidstone, to which Prof. Owen had given the name *Raphiosaurus*; a portion of the lower jaw, containing twenty-two awl-shaped teeth, and another specimen consisting of twenty dorsal, two lumbar, two sacral, and a few caudal vertebrae, with the pelvic bones, were described. Part of the lower jaw, with teeth, of another *Lizard*, about the size of the *Iguana*, was described as occurring in the eocene sand under the red crag at Kyson. Remains of a *Lacertian* were next described, from the celebrated oolite at Stonesfield. The structure of these bones indicates a close affinity to the *Scincoid Lizards*, the largest forms of which now exist in Australia, where they are associated with *Araucariae* and *Cycadeous Plants*, with living *Clavagellae*, *Terebratulæ*, and *Trigonie*, and with the peculiar marsupial quadrupeds, the remains of all which forms of organized beings characterize the same stratum and locality as does the present extinct *Lacertian*. Prof. Owen next proceeded to notice the more remarkable and gigantic forms of terrestrial Saurians of the same period, from the eocene tertiary to the oolites. Of these, the *Megalosaurus*, *Iguanodon*, and *Hylæosaurus*, had been described by their original discoverer, Dr. Mantell, and by Dr. Buckland in his 'Bridgewater Treatise.' Prof. Owen, after pointing out additional peculiarities of structure discovered in specimens subsequently found, and the new localities from which these specimens were derived, observed that the name *Iguanodon*, by conveying the idea of a gigantic *Iguana*, created an erroneous idea of its affinities. No existing lizard differed more from the *Iguana* than did the *Iguanodon*, in the absence of the ball and socket joint of the vertebrae, and likewise in the structure of the teeth, which is characterized in the gigantic extinct herbivorous reptile by numerous parallel medullary canals. The femur of the *Iguanodon*, in the process continued from the inner side, near the upper third of the bone, deviates from all modern *Lacertians*, and approaches nearer the *Crocodyl*, but surpasses them in the development of the ridge in question. A detailed description of the skeleton, founded upon nearly all the remains of the *Iguanodon* yet discovered, was next given; the form of the claw-bones of the *Iguanodon*, and especially of some enormous ones recently discovered with other bones at Horsham, was described, and from a comparison of these with other specimens from the Isle of Wight, and with those preserved in the slab containing the Maidstone *Iguanodon*, Prof. Owen stated it to be his opinion, that the *Iguanodon* did not possess the peculiarity of having the fore legs provided with compressed, and the hind legs with depressed claws, but that the narrow compressed curved claws occasionally found in the Wealden belonged to another extinct reptile. This section of the Report concluded with a notice of all the British localities, and the strata in which those remains had been discovered. The anatomical peculiarities of the *Hylæosaurus*, another large extinct reptile of the Wealden clay, discovered by Dr. Mantell, were next described; and an account of the microscopical structure of the dermal bones was given. This remarkable reptile combines the sub-biconcave structure of the vertebrae, with *Crocodyl*ian scutæ, and a *Plesiosauroid* form of the scapular arch. The teeth not uncommonly found in the Wealden strata, formerly supposed to belong to the *Phytosaurus cylindricodon* of Jaeger, and more recently to the genus *Rhopalodon*, of Fischer de Waldheim, Mr. Owen showed to be quite distinct from both, and stated that if they were not the teeth of the *Hylæosaurus*, they must belong to some unknown genus of *Lacertine Saurian*. The remains of the genera *Thecodon* and *Palæosaurus*, from the magnesian conglomerates near Bristol, and of the genus *Cladeiodon*, from the keuper sandstone of Warwickshire, were next described. These were the most ancient of the Saurians yet discovered in Great Britain, and although they differed from modern *Lacertians* in the implantation of their teeth in distinct sockets, agreed with them in the form and structure of the teeth. The last genus of Saurians described (*Rhynchosaurus*, O.) was new to science, and the remarkable peculiarities of its cranial anatomy, together with its vertebral characters, and the structure