represented), but extends to a remarkable extent to the Asclepiadaceæ and also to the Leguminosæ; probably other families are also affected. It seems likely that in the Transvaal this development enables the plant the better to survive adverse temporarily xerophytic conditions. It is particularly noticeable here that these plants are among the first to flower in the spring, and that many—I am not yet able to say with certainty, most—of them flower without a drop of rain having fallen for four or five months, and on dry hillsides where they are not affected by any subirrigation. It is true that there has been some heavy dew, but in some of these instances not enough to make the grasses and annuals start growth. As I write there are Liliaceæ, Iridaceæ and Asclepiadaceæ in bloom on some of the driest ridges of the high veldt, where scarcely a new blade of grass is to be found. It must not be inferred from this, however, that there is no green grass at this season. On areas of burned veldt the new growth of grass is in many cases quite perceptible even without any rain, perhaps owing to the effect of heavy dews.

JOSEPH BURTT DAVY.

BRAIN-WEIGHTS OF BROTHERS.

IN a former number of SCIENCE (XVII., No. 430, p. 516) the writer cited several brain-weights of brothers and sisters, mostly children. After the recent execution by electricity of the three Van Wormer brothers, the following data were obtained at the post-mortem examination:

	Willis.	Burton.	Fred.
Age	27	23	21
Stature (centimeters)	172.8	178.0	175.2
Head length	18.2	19 1	19.1
Head breadth	15.1	15 1	16.0
Cephalic index	82.9	79.0	83.7
Head circumference	53.3	54.1	56.1
Body-weight (estimated)	140 lbs.	145	150
Fresh brain-weight	1,340 gms.	1.358	1,600

The high weight of Frederick's brain occasioning some comment, it was again weighed after about five minutes' drainage, the second figure being 1,590 gms. The left hemicerebrum weighed 3 gms. more than the right in Willis's and 10 gms. less in Burton's, while in Frederick's case the two halves weighed exactly the same.

The physiognomy of the cerebral gyral conformation of the three brains is quite similar in some respects.

A full report will be published later. There was a well-marked postorbital limbus on the left side in Frederick's brain.

E. A. SPITZKA, M.D.

RECENT ZOOPALEONTOLOGY.

SCHLOSSER'S LITERATURBERICHT.

DR. MAX SCHLOSSER, of Munich, continues his invaluable 'Literaturbericht' up to the close of the year 1900, and sends it to us as an abstract from the *Archiv für Anthropologie,* Bd. XXVIII. Like all the previous numbers of this review, which began in 1883, this is most welcome not only because our attention through it is directed to the entire literature, but because of the original critical notes which the author adds to the various abstracts which he presents.

AMERICAN OLIGOCENE MICROFAUNA.

IN the White River formation near Pipestone Springs, western Montana, Mr. Earl Douglass discovered a very interesting microfauna. The American Museum of Natural History in 1902 visited the same locality and secured a rich collection of small mammals, especially important because the *Titanotherium* beds of South Dakota have yielded only the large mammals of the period. The collection is described by Dr. W. D. Matthew* as including one marsupial allied to *Didelphys,* three Insectivora, including two new genera of an extremely primitive type, two species of Creodonta, two of Carnivora related to the dogs and mustelines respectively and six species of rodents. Among the horses is the primitive *Mesohippus westoni,* older in type than *Mesohippus bairdi.* The Artiodactyla are also represented by a variety of small forms. In this connection may also be

* 'The Fauna of the *Titanotherium* Beds of Pipestone Springs, Montana,' *Bull. Amer. Mus. Nat. Hist.,* Vol. XIX., 1903, art. VI., pp. 197–226.

mentioned the small fauna of the lower Pleistocene which has been found in caves of California and in fissure deposits in northern Arkansas, which promise to give us a nearly complete knowledge of the Lower Pleistocene microfauna of North America.

TRIASSIC REPTILIA.

THE comparatively little known Reptilia of the Trias are now receiving more attention. Von Huene* has published in *Palæontographica* quite an elaborate review of all the Triassic reptiles, including also the large amphibian Stegocephala of the Lower Trias as well as the South African forms.

Dicynodonts.—Dr. R. Broom† is contributing a series of very important papers on the South African Dicynodonts. One of the first of these, on the structure and affinities of *Udenodon,* appeared in 1901. In this genus as well as in *Dicynodon* he finds marked sexual characters or differences between the supposed males and females in the structure of the canine teeth and the massiveness of the lower jaw.

Theriodonts.—Among the Theriodonts the same author‡ finds two widely different types of palatal structure and he selects *Scylacosaurus* as the type of a new order, Therocephalia, to include the most primitive of the Theriodonts. It is possible that the higher typical Theriodonts, such as *Galesaurus* and *Cynognathus,* are descended from the Therocephalians; but the gap between the two is very great.

From Aliwal North he records§ a very surprising discovery of the lower jaw of a small mammal which is named *Karoomys Browni,* probably the oldest mammalian jaw which has yet been discovered. The jaw, although of greater geological age, remotely suggests that of *Microconodon* from our Upper Triassic. The angle is well developed and but very slightly inflected. The author considers that its nearest allies are probably to be found among the Jurassic forms, such as *Diplocynodon* Marsh.

Vomer and Prevomer.—Another paper by the same author on the mammalian and reptilian vomerine bones* advances the theory that the true vomer in mammals is represented by the parasphenoid of Huxley, a very large element in the Ichthyopsida and reduced or wanting in the Sauropsida. It is maintained further that the so-called vomers of reptiles are entirely distinct elements, to which the name 'prevomer' should be given. These are represented by the 'dumb-bell bone' of Monotremes, and by vestigial elements in Cheiroptera. The true mammalian vomer is a single median element developed between the united trabeculæ, while the Sauropsidan prevomer is a paired element formed in connection with the nasal capsules. Both elements exist in the Amphibia, and in general the prevomers are enlarged and the vomers reduced in Reptilia, while in Mammalia the prevomers are reduced and the vomers enlarged.

The same author† transfers the genus *Procolophon,* which has always been considered related to the solid-skulled Cotylosauria, to a group related to *Sphenodon* with two distinct temporal arches.

CRETACEOUS REPTILES.

Mosasaurs.—Baron Franz Nopcsa, Jr.,‡ traces the great marine lizards, or Mosasaurs, back to the Aigialosaurs, which differ from Mosasaurs only in not being so thoroughly adapted to pelagic life. These reptiles, which were found in the Lower Cretaceous of Dal-

* Uebersicht über die Reptilien der Trias,' *Palaeontographica*, 1902, pp. 1–84, tab. I.–IX.

† 'Remarks on Certain Differences in the Skulls of Dicynodonts, Apparently due to Sex,' *Proc. Zool. Soc. Lond.*, June 3, 1902.

‡ 'On the Structure of the Palate in the Primitive Theriodonts,' *Geol. Mag.*, Decade IV., Vol. X., No. 470, August 1903.

§ 'On the Lower Jaw of a Small Mammal from the Karoo Beds of Aliwal North, South Africa,' *Geol. Mag.*, December IV., Vol. X., No. 470, August, 1903.

* 'On the Mammalian and Reptilian Vomerine Bones,' *Proc. Linnean Soc. of New So. Wales*, 1902, Pt. 2, October 29.

† 'On the Remains of *Procolophon* in the Albany Museum,' *Records of the Albany Museum*, Vol. I., No. 1, p. 8.

‡ 'On the Origin of the Mosasaurs,' *Geol. Mag.*, Decade IV., Vol. X., No. 465, p. 119, March, 1903.

matia, show a strong relationship to the living monitor lizards, differing from them only in those adaptive features in which they approach the Mosasaurs. Still farther back he hypothecates a terrestrial Jurassic type, of which the Cretaceous Mosasaurs and recent Monitors are the offspring. The author was not aware that Dr. Louis Dollo,* of Brussels, had already presented a similar theory in 1892—apparently another case of independent discovery. Baron Nopcsa has presented also recently a number of interesting memoirs upon the Iguanodontia.

Plesiosaurs.—After having exhaustively studied the North American Mosasaurs, Professor S. W. Williston has begun to monograph the North American Plesiosaurs, his first complete paper, 'North American Plesiosaurs, Part I.,' appearing from the Field Columbian Museum last April. This part is devoted first to an exhaustive description of the remarkably preserved type *Dolichorhynchops osborni* discovered by Sternberg in the chalk of Logan County, Kansas, and now mounted in the museum of Kansas University. Its most distinctive feature is the great elongation of the snout correlated with a relatively abbreviated neck. The author finds that the Plesiosaurs, like the Mosasaurs, were divided into a number of independent but contemporaneous phyletic series, the distinctive characters of which are chiefly found in the structure of the shoulder girdle, in the proportions of the neck and of the skull. All the Plesiosaur materials in the American Museum of Natural History have been placed at the author's disposal for study, and the Carnegie Institution has made a special grant for the continuation of this research.

JURASSIC REPTILES.

Compsognatha.—Franz v. Nopcsa† has restudied the type and other specimens of *Compsognathus* from the Jurassic of Solenhofen. He has made a special examination of the so-called 'embryo' discovered by Marsh in the body cavity of the Munich type; and he comes to the conclusion that this supposed embryo is the skeleton of a small lizard. Osborn* has recently described a supposed bird-catching Dinosaur found in the Como beds of Wyoming and now mounted as a remarkably complete skeleton in the collection of the American Museum of Natural History. This type probably belongs to the same subdivision of the Carnivorous Dinosaurs as *Compsognathus,* namely, the Compsognatha of Huxley, distinguished by hollow vertebræ in contrast with the solid hour-glass-shaped vertebræ of the Megalosauria. *Ornitholestes* is particularly distinguished by three very long, slender fingers on the manus, the other fingers being reduced, hence the supposition that it was adapted to grasping a slender and agile prey such as the Jurassic birds.

Sauropoda.—Our knowledge of the Sauropoda, or amphibious Dinosaurs, is being enriched by descriptions of remarkably complete specimens of *Brontosaurus* in the Field Columbian, Carnegie and American Museums. Dr. E. S. Riggs has briefly described the former and is now preparing an elaborate paper. Mr. J. B. Hatcher is describing the Carnegie Museum skeleton. In the American Museum of Natural History, an exceptionally large skeleton of *Brontosaurus,* discovered in 1898, is being restored and mounted complete. In the Yale University Museum the pelvis and hind limbs of the still more perfect type skeleton of *B. excelsus* have recently been mounted under the direction of Professor C. E. Beecher.

Mr. Hatcher† shows that *Pleurocœlus nanus* Marsh, the smallest of the Sauropoda, is identical with *Astrodon johnsoni* Leidy, and is closely related, as Marsh pointed out, to remains found in Jurassic deposits near Havre, Normandy.

* 'Les Ancêstres des Mosasauriens,' *Bulletin Scientifique de la France et de la Belgique,* extr. du Tome XXXVIII.

† 'Neues über *Compsognathus,*' Sep.-Abdr. a. d. *Neuen Jahrb. f. Miner., Geol. u. Palaeont.,* Beilage-Band XVI., 1903, S. 476–494.

* '*Ornitholestes hermanni,* a New Compsognathoid Dinosaur from the Upper Jurassic,' *Bull. Amer. Mus. Nat. Hist.,* Vol. XIX., 1903, art. XII., pp. 459–464.

† 'Discovery of Remains of *Astrodon* (*Pleurocœlus*) in the Atlantosaurus Beds of Wyoming,' *Ann. Carnegie Museum,* Vol. II., 1903, pp. 9–14.

From the famous quarry of Cañon City, Colorado, the same author* describes a new Sauropod, *Haplocanthus priscus,* distinguished by simple neural spines in the posterior cervical and anterior dorsal vertebræ, thus totally unlike either *Camarasaurus, Brontosaurus* or *Diplodocus.* The author regards it as the most generalized member of this order yet discovered in America, but that it is a member of this order he believes is clearly shown in the structure of the pelvis and by other characters exhibited by the vertebræ, its nearest affinities being to the Morosauridæ.

H. F. O.

SCIENTIFIC NOTES AND NEWS.

THE following is a list of those to whom the Royal Society has this year awarded medals: The Copley medal to Professor Eduard Suess for his eminent geological services, and especially for the original researches and conclusions published in his great work 'Das Antlitz der Erde.' A royal medal to Sir David Gill for his researches in solar and stellar parallax, and his energetic direction of the Royal Observatory at the Cape of Good Hope. A royal medal to Mr. Horace T. Brown for his work on the chemistry of the carbohydrates and on the assimilation of carbonic acid by green plants. The Davy medal to M. Pierre and Madame Curie for their researches on radium. The Hughes medal to Professor Wilhelm Hittorf for his long continued experimental researches on the electric discharge in liquids and gases.

LORD KELVIN received the degree of D.Sc. from the University of Wales on the occasion of the Court of November 13.

THE Royal Asiatic Society has conferred its triennial medal on Sir William Muir, lately principal of the University of Edinburgh.

DR. HENRY S. PRITCHETT, president of the Massachusetts Institute of Technology, has resumed his official duties after a brief foreign visit.

PROFESSOR GEO. F. ATKINSON, of Cornell University, returned to America on November 14, after having made a study of fungi in various European collections.

DR. L. MCI. LUQUER, of the department of mineralogy of Columbia University, has obtained leave of absence and will sail for Europe early in February.

DR. R. D. MURRAY, of the U. S. Marine Hospital Service, who has been at Laredo, Texas, combating the epidemic of yellow fever, has been seriously injured as the result of a runaway accident.

MR. AMBROSE SWASEY, of Cleveland, Ohio, has been nominated for president of the American Society of Mechanical Engineers. The society will hold its annual meeting in New York, beginning on December 1, when the president, Mr. James M. Dodge, will deliver the annual address, the subject being 'The Value of an Engineering Education to a Young Man.'

MR. R. K. KAYE GRAY gave the presidential address before the British Institution of Civil Engineers on November 12.

DR. OTTO AUGUSTUS WALL has completed his thirtieth year as professor of materia medica and botany in the St. Louis College of Pharmacy. On the evening of November 14, the graduates of the institution presented the college with a life-size medallion of Professor Wall, and a duplicate medallion was presented to his family. The presentations were accompanied by appropriate exercises, followed with a banquet tendered Professor Wall by the Alumni Association.

PROFESSOR W. M. SCOTT, formerly state entomologist (and pathologist) of Georgia, Atlanta, Ga., has resigned to accept a position as pathologist in the Bureau of Plant Industry, U. S. Department of Agriculture. He has already entered upon his new duties, which relate to diseases of orchard fruits. Professor Wilmon Newell, formerly of Iowa, recently of the Texas Agricultural College, has been appointed as state entomologist of Georgia to fill the vacancy caused by Professor Scott's resignation.

* 'A New Sauropod Dinosaur from the Jurassic of Colorado,' J. B. Hatcher, *Proc. Biol. Soc. Washington,* February 21, 1903, Vol. XVI., pp. 1–2.