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developed on the same plan as in *Bothropolys*, and so far as we see, the myriopodan brain corresponds more closely in its general form and histology with that of the insects than the Crustacea. The large, thick optic nerve arises from the upper side of each hemisphere. The median furrow above is deep, and on each side is a mass of small ganglion cells; also a mass in the deep fissure below the origin of the optic nerve, and another mass on the inferior lobe extending down each side of the œsophagus, probably near or at the origin of the posterior commissure. These masses, *i.e.*, those on the upper and under side of the brain, connect on each side of the median line, and in this respect the brain is as in *Bothropolys*. There are no large ganglion cells as in Crustacea, including *Limulus*.

There is then, no very close resemblance in form or histology, between the eye and brain of *Limulus* and the myriopods, the two types of eye being essentially different.—*A. S. Packard, Jr.*

ZOOLOGICAL NOTES.—A communication by Dr. W. J. Hoffman, on a supposed hybrid between the lynx and domestic cat, was lately read before the Zoölogical Society of London.—The second example of *Archæopteryx*, with the head, is now on deposit in the Geological Museum of Berlin. It was bought, according to *Nature*, for about \$5000, by Herr Siemens, of Berlin, in order to save it from importation to the United States.—M. Viallanes finds that the heart of insects is at first a simple tube open only at its two ends. So long as it has no lateral orifice it is completely arterial.—Undoubted alligators have been discovered in the Yang-tse-Kiang, the first of this genus to occur in the Old World. In the same river occurs the *Polyodon*, the only other existing species of this ganoid living in the Mississippi.—Prof. E. Van Beneden has discovered the existence of a double circulatory apparatus and two kinds of blood in parasitic Copepoda (*Clavella*, *Congricola* and *Lernanthropus*). The leaf-like lamellæ growing from the end of the body of *Lernanthropus* are true gills, like those of Annelids. There is no true heart; the circulation of the two fluids being caused by the contraction of the body. In certain worms, the closed vessels contain a red blood without corpuscles, while the connected lacunæ of the body (not true vessels) contain colorless blood with white corpuscles.—The use of the swimming bladder of fishes is to regulate the migration of fishes, according to M. Marangoni. They have to counteract its action by their fins. It produces a double instability, one of level, the other of position.

ANTHROPOLOGY.¹

PUEBLO INDIANS.—The Pueblos of New Mexico and Arizona are towns or villages inhabited by Indians of various races and speaking different languages. When we omit the Indians inhab-

¹Edited by Prof. ORIS T. MASON, Columbian College, Washington, D. C.

iting the Middle Gila river, who are also sometimes spoken of as Pueblo Indians, the languages of the others are divisible into four families.

Shinumo.—The *Shinumo* (sometimes called *Móki*) speak a language of the Sho-sho-ni-an, considerably differing, however, from the neighboring Pai-Ute, Uta and Californian dialects of this family. They occupy six of a group of seven Pueblos—the seventh speaking a language of the Téwan—each under its own chief. These are the only Pueblos in Arizona, the remainder being within the limits of New Mexico.

The following authors are known to have written or left manuscripts on this language:

PALMER, DR. EDWARD.—Vocabulary of about 200 words (MSS.).

PALMER, CAPT. A. D.—Vocabulary of about 200 words (MSS.).

SIMPSON, J. H.—Vocabulary of the Moqui, 38 words. (In *Journal of a Military Reconnaissance &c.*, Wash., 1850, 8vo.)

BUSCHMANN, J. C. E.—“Völker und Sprachen Neu-Mexicos.” Akad. der Wissenschaften. Berlin, 1856, 4to.

LOEW, OSCAR—Vocabulary of about 200 words and some elements of grammar. In A. S. Gatschet “Zwölf Sprachen,” Weimar, 1876, 8vo.

POWELL, MAJ. J. W.—Vocabulary of the Shinumo, taken at Oraibi, one of the Pueblos (MSS.).

Zunian.—Zuñi (pron. Súnyi), a comprehensive name given to three inhabited and as many ruined Pueblos in Northwestern New Mexico, south of the Navajo Reservation: Zuñi, Old Zuñi or Cibola (ruined).

The linguistic literature is as follows:

SIMPSON, J. H.—Vocabulary of Zuñi, about 40 words in *Journal of Military Reconnaissance, &c.*, pp. 140-144, Wash., 1850, 8vo.

EATON, CAPT. J. H.—Vocabulary including numerals. (In *Schoolcraft*, Vol. III, pp. 416-432.)

WHIPPLE, LIEUT. A. W.—Vocabulary in *Pacific R. R. Rep.*, III, 2, pp. 91-93.

BUSCHMANN, J. C. E.—“Völker und Sprachen Neu-Mexicos.” Akad. der Wissenschaften, Berlin, 1856, 4to.

PALMER, DR. E.—Vocabulary of about 60 words (MSS.).

KLETT, FRANCIS—The Zuñi Indians of New Mexico. In *Popular Science Monthly*, N. Y., 1874, pp. 58c-591 (illus., Ethnological).

STEVENSON, J. S.—List of names given to Zuñi pottery, 1879 (MSS.).

Kéran.—*Kéra*, Span. Quera, plur. Queres, an ancient name of unknown signification given to Pueblo Indians west of the Rio Grande. Locally they are divided into two branches: 1. A northeastern branch on the Rio Grande, embracing San Felipe, Santo Domingo, Cótchiti, Santa Aña and Cía (Silla, Tse-a); 2. A western branch on the Rio San Juan, embracing Kawaikome, Laguna, Povate, Hasatch and Mogino.

The linguistic literature is as follows:

SIMPSON, J. H.—Vocabulary of Kéra, about 30 words. (In *Journal of Military Reconnaissance, &c.*, Wash., 1850, pp. 14c-143, 8vo.)

DAVIS, W. H. H.—“El Gringo, or New Mexico and her people,” N. Y., 1857, pp. 157-159, 8vo.

- WHIPPLE, LIEUT. A. W.—Vocabulary of Kiwomi, about 200 words, and of Cochitemi, about 60 words. (In Pacific R. R. Report, III, 2, pp. 86–89.)
- BUSCHMANN, J. C. E.—“Völker und Sprachen, Neu-Mexicos.” Akad. der Wissenschaften, Berlin, 1856, 4to.
- LOEW, OSCAR.—Vocabulary of Santa Aña, about 200 words and a few sentences. (In A. S. Gatschet “Zwölf Sprachen,” Weimar, 1870, 8vo.)
- LOEW, OSCAR.—Vocabulary of Laguna. (*Ibid.*)
- KLETT, FRANCIS—Vocabulary of Acoma, about 60 words, 1873 (MSS.).
- MENAU, JOHN—Teacher in Laguna. Specimens of Laguna primer and catechism, with interlinear English translation (MSS.).

Téwan.—The largest number of Indian towns in New Mexico, along the Rio Grande, speak dialects of the Téwan. It seems that in former times these dialects extended far into Texas and Chihuahua, along the same river, though only a few scattered remnants of them are now remaining there.

Of this family five main divisions may be made, these being mutually unintelligible :

1. Taño : Isleta ; another Isleta near El Paso ; Sandía.
2. Taos : Taos (Indian, Taxé) ; Picuni.
3. Jemes : Jemes (old Pecos is consolidated with it).
4. Tewa or Tehua (“ house, houses ”) : San Ildefonso, San Juan, Pojoaque, Nambe, Tesuque, Santa Clara and one of the Moki Pueblos. Of these Pueblos, Santa Clara is the only one located on the western bank of the Rio Grande.
5. Piro in Sinecú, south of El Paso.

Linguistic literature :

- SIMPSON, J. H.—Vocabulary of Jemes, etc., 30 words, pp. 140–143, reprinted in Davis, “El Gringo.”
- WHITING, DAVID V.—Vocabulary of Tesuque, about 400 words. (In Schoolcraft, III, pp. 446–450.)
- BUSCHMANN, J. C. E.—“Völker und Sprachen,” Berlin, 1856, 4to.
- LOEW, OSCAR—Isleta, Jemes, San Ildefonso, San Juan, vocabulary of about 230 words each, and sentences from Tesuque (about fifty). (In A. S. Gatschet, “Zwölf Sprachen,” Weimar, 1876, 8vo.)
- PALMER, DR. E.—Vocabulary of Taowa (MSS.).
- BARTLETT, J. R.—Vocabularies of Piro, of Sinecú, of Tigua (viz : Téhua, Tewa) (MSS.).
- YARROW, DR. H. C.—Vocabulary of Los Luceros (MSS.).
Vocabulary of Los Taos. In A. S. Gatschet’s “Zwölf Sprachen,” Weimar, 1876, 8vo.
- KANTZ, AUG. V.—Vocabulary of Isleta, 1869 (MSS.).
- GIBBS GEORGE—Vocabulary of Isleta, 1868 (MSS.).

—*J. W. Powell.*

PRE-ADAMITES.—This designation is the external title of a volume just issued in Chicago, by S. C. Griggs & Co., of which the full title is as follows : “Pre-adamites ; or a demonstration of the existence of men before Adam ; together with a study of their condition, antiquity, racial affinities and progressive dispersion over the earth, with charts and other illustrations, by Alexander Winchell, LL.D.” The paper, press work and illustrations are

excellent, and reflect great credit on the publishers. The work consists of 478 pages, and may be considered under three very different aspects, the biblical or exegetical, the ethnographical or descriptive and the ethnological or deductive.

From an exegetical point of view, the author states that the account of Creation in Genesis has long been interpreted to mean, 1. That the world, with all it contains, was created by God; 2. That this occurred 4000 years B. C.; 3. That it was accomplished in six days; 4. That Adam was created on the sixth day; 5. That Eve was formed from a rib of Adam; 6. That Adam and others lived over 900 years; 7. That the creation of man occurred in Western Asia; 8. That about 1656 A. M. a deluge destroyed the whole race save Noah and his family; 9. That all existing races came from Noah; 10. That the black races descended from Ham.

On the contrary, Prof. Winchell holds, and defends with a great deal of learning, that the three dispersions of the posterity of Noah refer to the white race alone, embracing the blonde family (Japhetites or Aryans), the brunette family (Semites) and the sun burnt family (Hamites). The brown races, both Mongoloid (Tartar, Turanian) and Dravidian, and the black races, including Negro, Hottentot, Papuan and Australian are extra-Noachic and extra-Adamic.

All the legitimate and logical results from such a position are fully and freely admitted by the author; such as the rejection of the old chronology, non-inspiration of the narrative portion of the Old Testament, the application of apparent names of individuals to tribes or nations.

In the ethnographic portion of the volume, the author has done his best work. It is not too much to say that there is no single work in our language which brings together so much of the latest investigations concerning the tribes of men inhabiting our planet, and their distribution over the continents. Much of this is provisional. If the work of Mr. Keane, lately mentioned in these notes, demonstrating a large infusion of Aryan blood and language throughout the Polynesian group, should hold good, Prof. Winchell would have to review his Adamic, or rather his Noachic, studies to find the limit of mixture between the Adamite and the Pre-adamite.

The discussions of ethnological problems show that the author is cognizant of the latest phases of the subject. The one to which he devotes the most space and in which he gives loose reins to his glowing style, is the question of racial distinctions and the possibility of degeneracy. Some of his reflections upon Negro inferiority in answer to Drs. Strong, Whelan and others, will, doubtless, bring down upon him no little castigation. Apropos of degeneracy, Prof. Winchell makes a very neat distinction between *structural* and *cultural* degradation, pp. 274-282, main-

taining that the former rarely or never occurs, and that the oft-mentioned instances of race degeneracy is cultural or circumstantial.

In the later chapters of the work the genealogy of the three groups of races, the cradle of humanity, the antiquity of man and his priscan condition are ably and exhaustingly discussed.

In conclusion, there is no doubt that whether the author desires it or not, this volume will excite more good, faithful study, and more ill-tempered writing on the subject of anthropology than any other work that has appeared in our country during the last decade.

MATERIAUX POUR L'HISTOIRE DE L'HOMME. — This old and established journal plods along, and although mainly devoted to local matters, contains, occasionally, papers of general interest. Nos. 7-12, 1879, are before us with the following budget: In No. 7 MM. Cazalis de Fondouce and Helbig treat of the archæology and early history of Italy, with bibliographical references. Dr. Noulet reviews M. Mourai's work on the age of polished stone and of bronze in Cambodia. At the close of the number will be found a review of the labors of the Swedish Anthropological Society. No. 8 is taken up with brief reports on the anthropology of the French Association of 1879, and also of the German Congress of Anthropologists. Nos. 9 and 10 give us valuable summaries upon the labors of Abbé Bourgeois and of the Anthropological Society of Berlin, and a programme of the forthcoming Congress of Archæologists at Lisbon, and of the Congress of Americanists. The last number of the year is the most attractive, being nearly taken up with a paper upon the tumuli of Avezac (Hautes-Pyrénées), illustrated by five beautifully executed lithographic plates.

With Nos. 1 and 2 of 1880, this standard journal enters upon its eleventh year. No. 1 opens with a paper, by Dr. Gross, upon the latest discoveries in the lacustrine habitations of Lake Bienne, a small expanse of the river Aar, north of Lake Neufchatel. The interest in the investigations is heightened by the fact that the draining of the marshes has rendered the old sites amenable to cultivation, and the farmers have not been slow in taking up these rich bottom lands. Some old lacustrine stations have already disappeared entirely, and others are fast giving place to the ploughed field. This fact makes the labors of Dr. Gross and his co-laborers of the utmost importance. The remainder of this and the following number is taken up with reviews, a large portion being devoted to Prof. Whitney's Calaveras cranium and the Peabody Museum of Cambridge.

The ninth session of the International Congress of Anthropology and Prehistoric Archæology will be held in Lisbon, Sept. 20-29. President, J. de Andrade Corvo.

ARCHÆOLOGICAL HINTS.—Mr. Josiah Morrow, in a letter to the Smithsonian Institution, describes a work in Warren county, Ohio, in which the earth of the banks is very much altered by fire. Is there any evidence in this of Mr. Morgan's theory that many of our earthworks were sites of communal dwellings? The earth may have been baked by the lodge fires.

In a conversation with Mr. Stevenson about the process of pottery manufacture among the Pueblo Indians, I found that the women, in making those symmetrical, round-bottomed jars, use as a support a box of fine dry sand. They turn the mass around in the sand while they are working it up into shape. After finishing the jar, they wash off the sand and cover the surface with a thin paste of prepared clay and water. In this rude support, so secure and yet so yielding, I could but see the predecessor of the potter's wheel. Since writing the foregoing, I have seen Mr. Schumacher's account of pottery making in California, which confirms my view.

The same Indians in making their wares, owing to the scarcity of fresh water, use the brackish waters of the saline pools. The clay itself is also impregnated with salt. It may be that this necessity, so frequently the "mother of invention," is the true secret of the quasi glazing found upon much of the Pueblo pottery, especially the oldest.—*O. T. M.*

PROF. FLOWER'S LECTURES.—During the past season Prof. J. W. Flower delivered a course of lectures before the Royal College of Surgeons in England. We have earnestly desired to see a full report of them, but as yet the best account is a series of short reviews in the *British Medical Journal* for April and May of this current year.

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 Kirghiz Proverbs. *Academy*, March 27.
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 RAWLINSON, H. C.—Notes on a newly-discovered clay cylinder of Cyrus the Great. *J. Roy. As. Soc. of Gr. Britain*, Jan.
 RECLUS, E.—Studies of primitive peoples. *Internat. Rev.*, May.
 ROBERTSON, R. S.—The Mound-builders of America. *Mag. of Am. History*, March.
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- SATOW, E.—Ancient Japanese rituals. *Tr. As. Soc. of Japan*, VII, ii, iv.
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 TAYLOR, E. C.—Musical instruments of all ages. *Nat. Repository*, April.

GEOLOGY AND PALÆONTOLOGY.

EXTINCT BATRACHIA.—The recent discoveries of Dr. Anton Fritsch in the Permian "gaskohle" of Bohemia,¹ have added greatly to the interest of this subject. This gentleman has discovered many specimens in an excellent state of preservation. This enables him to give details of the osteology of several types, which has been hitherto a desideratum. He refers all the *Batrachia* to the species of three families, for which he uses the names *Branchiosauriæ*, *Apatontidæ* and *Æstopoda*. He gives thorough accounts of the structure of a leading genus in each, of *Branchiosaurus*, *Melanerpeton* and *Dolichosoma* respectively. The specimens are so well preserved that his descriptions and figures are very instructive. He shows that *Branchiosaurus* possessed branchiæ apparently internal, and of a totally different type from those of existing gilled *Batrachia* or their extinct representative, *Cocytinus*, from the coal measures of Linton, Ohio. *Dolichosoma* was, like our *Phlegethontia*, a snake-like form, with ribs and without extremities, and with external gills. The presence of ribs distinguishes it from our *Phlegethontia*, although Dr. Fritsch thinks the present writer in error in denying them to the latter genus. He thinks he sees them in the figure of *P. serpens* in Vol. II of the Palæontology of Ohio. The marks in the position of ribs on the block there figured, were stated to represent, in all probability, traces of the longitudinal tendons so well developed in *Amphiuma*, and they furnish no ground for a belief in the presence of ribs. Dr. Fritsch describes some curious pectinate bones which he supposes to belong to the external generative organs of *Ophiderpeton*.

Dr. Wiedersheim gives² a very full account of the osteology of an only moderately preserved specimen of a batrachian from the Bunter sandstone (Lower Trias) of Switzerland. The structure of the pelvic and scapular arches, and of the limbs, are best given, and a cast of the cranial cavity is described. He reviews the systematic work previously done, intercalating his own results. We remark here that in one instance he takes an analytical key of genera given by Cope for a systematic classification, and very naturally criticises it adversely.

¹ Fauna der Gaskohle und der Kalksteine der Permformation Boehmens. Prag 1878-1880.

² *Labyrinthoden rüttemeyeri* Abh. d. Schweiz. Palæont. Gesselsch. Von. R. Wiedersheim. Zürich, 1878.