A New Dicotyline Mammal from the Kansas Pliocene.

THE genus *Platygonus* was described in 1852 by Dr. John L. Leconte, from various fragmentary remains obtained at Galena, Ill. Additional species have since been described by Marsh based upon the still more uncertain evidence offered by the teeth alone. The genus has thus had a very doubtful existence, or has been merged into *Dicotyles*. The recent acquisition by the University of Kansas of several skeletons of a species, which, from the comparison of Leconte's figures, I believe belongs here, enables me to give for the first time satisfactory generic characters. This species, which may be known as *P. leptorhinus* Will., is of about the same size as the type, *P. compressus* Lec., from which it is at once distinguishable by the angle of the jaws, which is shaped as in *Dicotyles*, though not at all inflected. From *P. striatus* Marsh, from the Pliocene of Nebraska, the absence of striation of the second premolar tooth (upon which the species was based) will separate it. A figure of the restored skeleton, with a full description, will shortly be given. For the present, the following characters will be of interest: The dentition is like that of *Dicotyles*, except that the incisors are much smaller, and the third lower one is wholly wanting. The molars show a partial confluence of the cusps, but the difference from *Dicotyles* in this respect is not striking. The most remarkable character which the genus shows is the entire absence of the outer toes on both hind and fore feet. They are represented by short splints, which do not reach to the middle of the conjoined metapodials. There are other characteristic differences in the carpus and tarsus, which will be best shown by the aid of figures. The animals were decidedly stouter in form than the living peccaries and stood about thirty inches in height. The last premolar of the milk series had three series of cusps.

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BOOK-REVIEWS.

Neudrucke von Schriften und Karten über Meteorologie und Erdmagnetismus. Herausgegeben von Prof. Dr. G. HELLMANN.

No. 1. *L. Reynman, Wetterbuechlein. Von wahrer Erkenntniss des Welters*, 1510. Facsimiledruck mit einer Einleitung. Berlin, A. Ascher & Co., 1893, 4to, 42,14 p. 6 marks ($1.50).

No. 2. *Blaise Pascal. Récit de la Grande Expérience de l'Equilibre des Liqueurs. Paris*, 1648. Facsimiledruck mit einer Einleitung. Berlin, A. Ascher & Co., 1893, 4to, 10,20 p. 3 marks (75c.)

IN view of the growing interest that is being shown those infant twin sisters of astronomy—meteorology and terrestrial magnetism—it may not be amiss to call the attention of the readers of *Science* to the above-named series of excellent reprints in facsimile of rare old books and charts that have been epoch-making in the subjects named. Additional importance is to be attached to these reprints in that they are edited by a scholar whose keen critical ability and power for careful, painstaking research have put him in the front rank of the meteorologists and bibliographers of the day.

With the coöperation of the German Meteorological Society and its Berlin branch, the above two numbers have been issued and others promised, such as Luke Howard's "On the Modifications of Clouds, 1803," in which we have the first attempted classification of cloud formations; "Halley's Isogonic Chart of 1700"—the first of the kind; "Humboldt's Isotherms, 1817"—the earliest drawn; and others. As the chief object in view is to make these classic works, the originals of which are well-nigh unobtainable and very expensive, accessible to every one interested, they are published at the low price named above. Professor Hellman and his coöperators have thus earned for themselves the highest praise and deserve the heartiest coöperation.

No. 1, a most elegant volume, is a facsimile reprint (preceded by a careful and critical discussion by Professor Hellmann) of the oldest meteorological book printed in German. It may, thus, apparently, have more of a *local* interest. The fact, however, that it ran through seventeen editions in thirty-four years, the earliest being in 1505, of which no trace can now be found, and that it was almost literally translated in "The Boke of Knowledge of Thynges Vnknown, apperteyning to Astronomy, with certain necessarye Rules," published in London in 1585, already enhances the interest in the book. It was besides incorporated in many other works. It was the first attempt at emancipation from the astrological superstitions of the day. In their stead the author strove to substitute simple rules (many in rhyme) based upon natural laws and phenomena. The book thus possesses an interest not only to the professional meteorologist, but also to the bibliographer, the historian, the student of folk-lore, in fact, to all who are interested in the gradual growth of the human mind and in the throwing off of the shackles imposed by the Middle Ages. Of the seventeen editions, Professor Hellmann, through correspondence with one hundred and fifteen libraries, could barely trace more than three dozen copies. The reprint has been made from the second edition of 1510, the only copy of which being in the possession of Professor Hellmann. Of Reynman little could be learned except that he lived in classic Nuremberg, about 1520, and was thus a contemporary of such illustrious men as Georg Hartmann, Albrecht Dürer, and a host of eminent scientists. In writing his book he drew largely upon a large astrological treatise by Guido Bonatti, an Italian astrologer of the thirteenth century, which was published in 1491, and upon "Oposculum repertorii prognosticum in mutationes æris, 1485," by Firmin de Belleval, a Frenchman, otherwise unknown.

No. 2. This volume will surely interest every scientist. It is the reprint of a work of the greatest rarity, as but three copies, two in Paris and one in Breslau, could be found, the one in Breslau being used in the reproduction. In this volume is given the first experimental proof that the pressure of atmospheric air is the cause of the rising of mercury (or any other liquid) in an inverted tube previously exhausted of air and placed in a trough of mercury—the memorable experiment of Torricelli (or rather one of his pupils), in 1643. Up to the time of the publication of this interesting tract, the universal belief was that the cause was to be sought in nature's *horror vacui*. The experiment was most carefully and scrupulously carried out by Perier, a brother-in-law of Pascal. The first eight pages of the facsimile reprint form the letter of instructions sent to Perier by Pascal, Nov. 15, 1647. On Sept. 22, 1648, Pascal received the happy news from Perier of the successful outcome of the experiments. (See p. 17–20). Perier filled two tubes with mercury and saw that their readings agreed at Clermont. He then emptied one and carried it to the top of the Puy de Dome (3550 feet above Clermont) and after filling it again with mercury, found the reading less. After repeating the experiment at a station half-way down, he descended to Clermont and again filled his tube, but now found that it read the same as the one previously left there. Hence, ascent in the air or decrease in height of superincumbent atmosphere meant a fall in the barometric reading, or decrease in pressure. The conclusion was at once evident

that the cause was to be ascribed to the atmosphere. Immediately upon receiving the great news, Pascal hastily drew up a tract and gave to the world the knowledge of the great secret. It is the reproduction of this herald of the great discovery that Professor Hellmann has given us. It was never again re-published, but was incorporated almost unaltered in the "Traitez de l'Equilibre des Liqueurs," etc., published in 1663 by Perier, one year after Pascal's death. Hence it is usually believed that the "Traitez" gave us the first account.

As is well known, it is believed by many writers that Descartes had suggested these experiments to Pascal, and, in fact, he made that claim in two letters of 1649 to Carcavi. Pascal, as he expressly states in his "Récit," believed in a "horror vacui" up to the time of the successful execution of Perier's experiments, nor did he ever deny Descartes's statements. After weighing all the evidence carefully, Professor Hellmann believes he has to side with Mr. Mourisson, who in his recent work[1] declared against Pascal. Whatever may be the truth, the fact remains that Pascal first gave this important discovery to the world, that no little credit must be given Perier for the scrupulous care (He even surrounded himself with witnesses, so that "none could deny") with which he conducted the experiments, and that Professor Hellmann has certainly earned the praise of the whole scientific world in putting at the command of every one such a beautifully executed copy.

Essais d'Or et d'Argent. Par H. GAUTIER. Paris, Gauthier-Villars et Fils. 203 p., 1893.

Choix et Usage des Objectifs Photographiques. Par E. WALLEN. Paris, Gauthier-Villars et Fils, Quai des Grands-Augustins, 196 p., 1893, Broché, 2 fr. 50, Cartonné, 3 fr.

THE first of these works relates to the preparation and refining of the precious metals, and to their monetary and other alloys. In the preliminary part the author gives a rapid review of the chemical and physical properties of the precious metals and of those metals with which these are frequently alloyed. The principal alloys used in coinage and in jewelry are described, together with the legal control exercised upon them. It is very instructive to learn how closely this official circumspection is carried on in France, and we are forced to regard the looseness current in America with much dissatisfaction. The second part of the book is devoted to the purely practical side of the question, describing methods of refining and of assaying, as well as of analysis by the wet method.

E. Wallen has aimed to make his "Choice and Use of Photographic Objectives" essentially a practical discussion which shall act as a guide to the professional and amateur photographer alike, assisting them both in the choice of their lenses and giving an insight into the requisites of a successful picture. The book is rather more than its title indicates, for, without being abstrusely scientific, it leads one to an excellent theoretical as well as practical knowledge of the photographic apparatus.

Some Salient Points in the Science of the Earth. By Sir J. WILLIAM DAWSON, C.M.G., LL.D., F.R.S., F.G.S., etc. New York, Harper and Brothers. Illustrated, 469 p., 1894, $2.

A PUPIL of Jameson, a friend and co-worker with Murchison, Sedgwick, Phillips, Logan, Gray, Lyell, and, inded, with all those historians of the earth's past who have done so much to elevate mankind and to bring him to a sense of his Creator's greatness, Sir J. William Dawson needs no introduction to an English-speaking audience. Always exhibiting a true Christianity and retaining in his most speacialized researches a wonderful conception of the great truths to be learned, Dawson has endeared himself to many students of life as well as to those who have devoted themselves to the details of geology. "The Earth and Man," "The Origin of the World," "Science in Bible Lands," are found in every library, and his many purely scientific discussions have been valued aids in all geological and palæontological study. "The present work (we quote the preface) contains much that is new and much in correction and amplification of that which is old; and is intended as a closing deliverance on some of the more important questions of geology, on the part of a veteran worker, conversant in his younger days with those giants of the last generation, who, in the heroic age of geological science, piled up the mountains on which it is now the privilege of their successors to stand." In the rush of modern thought, in the *fin de siècle* annihilation of all that has been laboriously erected by our teachers, we are too often liable to forget that these edifices have a foundation which it will profit us to study. In the narrowness of our progress we see only an architecture incompatible, we believe, with the conditions of our greater knowledge, and hence we reject the same to build for ourselves higher structures, may be, but too often with a sacrifice of solidity, to brilliancy and originality of design. It is, then, exceedingly wholesome to take up such a work as the present and to be reminded that there are some, with an experience that few of us can hope to attain, who still cling to the fundamental theories with all the vigor of youth, and who remain undisturbed by the gyrations of modern scientific philosophers. In this "closing deliverance" by Sir William we find a series of chapters each gracefully dedicated to one of those whose labor and life have been given in corresponding research. The subjects discussed are indicated in the title, being those great problems which have presented themselves from the dawn of our extended understanding of the world's history; the process of world making, the first life, the nature of the geological record, the genesis and succession of the earth's fauna and flora, the cause of climatal change, the great ice age and pre-historic man—these are a few of the "Salient Points" which will interest all, whether scientists or laymen in the perusal of this charming work.

Conférences Publiques sur la Photographie. Organisées par LE DIRECTEUR DU CONSERVATOIRE NATIONALE DES ARTS ET METIERS. Paris, Gauthier-Villars et Fils. 545 p., avec 198 figures et 9 planches, 1893. 7 fr. 50c.

THE above unique work embraces nineteen lectures on Photography organized by the eminent Colonel Laussedat, Directeur du Conservatoire des Arts et Metiers, and delivered at that institution during the years 1891–92. Each lecture or conférence constitutes a monograph in its particular subject and in every case has been written by a specialist and originator in that subject. The lectures are here reprinted in the order of their delivery, and though a text-book graded arrangement is not possible the work as a whole is a complete and most valuable treatise on both theoretical and technical photography. Photography is essentially a French science, an art of French invention and in France is carried to its greatest perfection. In fact, nowhere else has it been made, or rather acknowledged to be, so truly a science or so worthy of scientific study and experiment. The contrast is particularly marked when comparing photographic literature of our own country, for instance, with the literature of the same subject in France. Of the many admirable works there recently published none will be likely to find more pleased readers than will this present volume of conférences. It is impossible even to attempt a synopsis of the many subjects treated, but the titles of a part at

[1] "Pascal: Physicien et Philosophe, etc." Paris, 1888.