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.

least will give an idea as to the scope of the work. The first lecture by M. A. Davaune is a charming historical discourse on the invention and application of Photography from Daguerre and Niepce to the present day.

Chronophotography, the study of moving bodies, is discussed by M. G. Demeny; Photography in Colors, by Prof. G. Lippmann, of the Faculty of Science of Paris; Astronomical Photography, by Prof. J. Janssen, Director of the Astronomical Observatory of Meudon, and Photographic Chemistry by M. C. Fabre. To enumerate rapidly the titles of other lectures we have: Medical Photography, Military Photography and Photocartography, Photogravure and Photochromography, the Photographic Objective, Photographic Processes, the Photography of Natural Phenomena, Iconometry and Metrophotography (sciences but little understood in this country but of the greatest importance), Microphotography, the Production of Panoramas, etc., etc.

The book is printed on heavy paper, and the typographic work is in excellent style. The illustrations in most cases are reproductions of photographs and while illustrating the text are in themselves works of art, adding a further charm to the volume.

NOTES AND NEWS.

THE impetus recently given to nature-study in the secondary schools has led to a demand for the more thorough preparation of teachers in the essentials of botany and zoölogy. Teachers cannot get special training in these branches during the college year, because it coincides with their teaching year. In the past their opportunities for getting it during summer have been limited, on account of the lack of summer schools. To meet this demand the New Hampshire College, coöperating with Superintendent Gowing, of the State Department of Public Instruction, will institute next July a summer school of biology, especially adapted to the needs of teachers in the secondary schools. The instruction in botany will be given by Principal Charles H. Clark, A.M., of Sanborn Seminary, Kingston, N. H.; and in zoölogy by Prof. Clarence M. Weed, D.Sc., of the college. Supplementary lectures will also be delivered by President Chas. S. Murkland, Ph.D., and Superintendent Fred Gowing, of Concord. The school will open Thursday, July 5, and continue until Saturday, Aug. 4. It will be held in the laboratories and class rooms of Thompson Hall, students being granted free use of the library, microscopes, aquaria, collections, and other facilities. The laboratory instruction will be supplemented by work in the field and class-room, and by informal discussions of such topics as are likely to prove useful for illustrative purposes in nature-study in the lower schools. The course of study will cover the line of work in botany and zoölogy recommended in the recent report of the Committee on Secondary School Studies, appointed by the National Educational Association for adoption by the secondary schools. In addition, there will be offered, to such teachers as may desire it, an opportunity of taking a special course in microscopical technique under Principal Clark, or in elementary entomology under Professor Weed. The situation of the college is peculiarly favorable to the study of natural history. Plants and animals inhabiting a great variety of land surface, as well as fresh, brackish, and salt water, are easily accessible.