

number of hypothetical scenes illustrating the fauna and flora of the past, as well as several phylogenetic trees.

*Le Valhalla des Sciences Pures et Appliquées, galerie commémorative et succursale du conservatoire des Arts et Métiers de Paris, à créer dans le Palais Neuf de Mansart, au Château de Blois.* Par le C<sup>te</sup>. Léopold Hugo. (Paris, 1875.)

THE four names of Watt, Fulton, Stephenson, and Denis Papin, inscribed on the roof of the railway station at Blois, suggest a train of thought to the author in connection with the triumphs of steam and its applications. Having previously described the Château de Blois, the writer puts forward a proposal (sometimes he calls it a dream) to turn the now abandoned château into a noble valhalla of science. A principal feature is a statue of Papin (born at Blois about 1650); there should be also statues of other scientific writers of all time and climes, appropriate inscriptions, portraits on the walls, and representations of interesting scenes in the history of science, chambers for the exhibition of models and instruments, a scientific library, and other matters. So his dream is to make this a Versailles of science. A classification of the sciences and a plan close this part of the pamphlet. We do not, however, concern ourselves here with this proposal or dream or whatnot, but pass on to a brief glance at the three appendices. The first is "Définition de la double-tendance Philosophique de la Science." Noting the objects the "immortal" Bacon had in view in his New Atlantis, he applies himself to the consideration of what is the classification that we can make of the sciences, and combats Auguste Comte's arrangement according to the increasing complexity which appears inherent in them. In our author's eyes all sciences have the same complex character (caractère de complication) either virtually or actually. Comte begins with mathematics, Hugo exalts them to a high place: "L'intérêt philosophique des sciences mathématiques est de marcher à la rencontre des sciences naturelles. Il n'y a rien là qui ressemble à une subordination des certaines sciences." The second is "Examen géométrique sommaire des orbites planétaires (ovhélites)." The writer remarks that recent discoveries in Astronomy have pointed to a new movement of the solar system in space, hence the orbit or trajectory of our planets is not a plane curve. This orbit is a helicoidal curve with an elliptical or oval projection. Hence ov-hél-ite. In the geometrical description of such a curve we must indicate whether the trace is *dextrorsum* or *sinistrorsum*. The ovhélites of the planets and of the earth are geometrically traced *sinistrorsum*. In this paper, which was originally communicated to the Mathematical Society of Paris, the author states the theorem "Les ovhélites planétaires sont tracées sur les cylindres à section droite elliptique (sauf perturbation) ou du moins ovalaire. Une des lignes focales des susdites ovhélites est commune; cette ligne est la trajectoire solaire." The third appendix is "Base scientifique de la numération décimale." We will again let the Count speak for himself, "Je propose aujourd'hui d'utiliser une des plus anciennes et des plus curieuses théories de la géométrie, restée jusqu'à ce jour sans emploi, pour établir un lien entre la géométrie et l'arithmétique, en donnant comme base à cette dernière science un nombre absolu et éternel." The five regular solids were treated of by Pythagoras. Cauchy and Poinsoot have added to these four stellated polyhedra. "En y joignant à mon tour la sphère (qui est le régulier infinioïdique) j'arrive à constituer géométriquement le nombre infranchissable de DIX." Thus we see there is a resemblance between the nine digits and zero on the one hand and the nine regular polyhedra and the sphere on the other. Further, there is a curious feature, there are five primes among these, and there are five regular convex solids. Such then is "la conception philosophique et vraiment scientifique du nombre fondamental DIX." After two thousand years we have arrived at an application of the theory of the regular

figures, there is hope also of establishing a rival to Euclid. A commission was appointed in March of last year to pronounce upon the Hugodecimal theory. "De la propriété régulière essentielle de l'espace, de l'absolu régulier, avoir fait jaillir le nombre DIX!" These are the principal points of interest in the pamphlet.

#### LETTERS TO THE EDITOR

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#### The Article "Birds" in "Encyclopædia Britannica"

IN reply to Prof. Huxley's letter of last week with reference to my review of the article "Birds" in the "Encyclopædia Britannica," I may mention that it is to the illustrious Nitzsch, as far as I am aware, that we owe the combination of the Swifts and the Humming Birds into a single family. Burmeister's edition of Nitzsch's "Pterylography" was published in 1840, and in Mr. Sclater's translation of that invaluable work (p. 86) we read, under the heading MACROCHIRES, "In this family I place the two genera, *Cypselus* and *Trochilus*, which indeed present but little external similarity, but are very nearly allied in the structure of their wings."

In 1867, the year in which Prof. Huxley promulgated his Classification of Birds, the palatal structure of the Humming Birds was imperfectly known, as may be gathered from the following passage in his memoir\* with reference to the Cypselomorphæ:—"The vomer is truncated at the anterior end, and the maxillo-palatines are slender and disposed nearly as in the typical Coracomorphæ (? *Trochilus*)." I believe that, at that time, no accurate account of it had been given by anyone.

When, in 1873, after I thought that I had fairly mastered Prof. Huxley's classification, Mr. Parker kindly informed me verbally that from his investigations on the subject he had discovered that the vomer of the Trochilidæ is sharp-pointed instead of being truncated. Upon re-reading Prof. Huxley's data for his division of Carinate birds in the Schizognathæ and the Desmognathæ, in both which groups the vomer is pointed (or not ossified), and the Aegithognathæ, in which the vomer is truncated, I naturally was led to see, as Mr. Parker has since stated in print,† that the Trochilidæ are not Aegithognathous, but Schizognathous; and I further inferred, justly I believe, that if Prof. Huxley had, in 1867, known that the vomer of the Humming Birds is sharp-pointed instead of being truncated, he would never have placed the Trochilidæ among the Aegithognathæ, for in so doing he would have been compelled to have given up the only common character of any importance which links together that group. When, therefore, I say in my review that "Professors Huxley and Parker place them [the Swifts and the Humming Birds] in quite different divisions," there can be no objection to my including Prof. Huxley's name with that of Mr. Parker in a general remark which is so fully borne out by the spirit of the classification introduced by the first and adopted by the second of these illustrious biologists.

That Prof. Huxley did, in 1867, adopt Nitzsch's combination of the Swifts with the Humming Birds, I would not attempt to deny, but then the palatal structure of the latter sub-family was not correctly known.

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#### The Difficulties of the Public Analysts

HAVING for some time past watched with painful interest the prosecutions under the new Adulteration Act, and seeing very clearly that whatever may be its success or failure in reference to its intended object, this Act of Parliament is becoming eminently successful in bringing chemical science into contempt, I am glad to see that you have taken up the subject in the columns of NATURE. I hope that it will be freely discussed. It may be safely affirmed that in the majority of cases where the vendor has made an effort to defend himself he has been able to flatly and positively contradict the certificate of the public analyst by counter-certificates of other analysts of equal or superior eminence. The latter case you have quoted is no exception, but may be taken as about a typical or average sample of such prosecutions. If this deplorable state of things is to continue,

\* Proc. Zoolog. Soc. 1867, p. 468.

† Trans. Zoolog. Soc. vol. ix. p. 292.