

rapidly towards the extremity, while a luminous horizontal band passing through the centre of the sun stretched across the firmament, showing three parhelia—two very bright on the small, one faintly illumined on the large, circle.—Combinations of the glycerinates of soda with the monatomic alcohols, by M. de Forcrand. This paper deals with the glycerinates of methylic, ethylic, propylic, isobutylic, and amylic soda.—On the comparative actions of solar heat and light, by M. E. Duclaux. It is shown that all the effects of combustion produced by heat may also be produced by light; but the reverse does not hold, there being a large number of reactions, which light alone seems capable of determining. All these reactions are resumed in the displacement of the primitive molecule, which becomes decomposed in a few simpler elements, such as the formic, acetic, and butyric acids, the methylic and ethylic alcohols, &c.—On the properties of inosite, by M. Maquenne. Continuing his study of this substance, the author shows that in its transformation it may give rise to several well-defined aromatic compounds. Its other properties, he considers, may now be anticipated theoretically.—On a combination of paratoluidine and chloride of copper, by M. E. Pomey.—On the composition of the grains of *Holcus sorgho*, and their application to the agricultural industry in the south of France, by M. Bordas. The analysis of this grain shows a mean of 42 per cent. of starch, 100 kilogrammes yielding 26 litres of good alcohol at 33° above proof.—On the jugal and pterygoid stems in the vertebrates, by M. A. Lavocat.—On the heterogamy of *Ascaris dactyluris*, by M. Macé.—Reply to M. Balbiani on the subject of *Leucophrys patula*, by M. E. Maupas. The author shows that he has in no way exaggerated the novelty and interest of his observations on the various reproductive processes of this organism, as asserted by M. Balbiani.—On diurnal and nocturnal physiological variations of the cerebral pulse, by MM. Rummo and Ferrannini. The authors' observations establish a complete cycle or periodicity in these variations, from which they hope to deduce the biological theory of normal sleep.—On the secreting ducts and aquiferous apparatus of *Calophyllum*, by M. J. Vesque.—On certain phenomena of linear corrosion in the limestone formations of Couzon, Rhone Valley, by M. Ferdinand Gonnard.—On the epoch when the submerged valleys of the Gulf of Genoa were formed, by M. A. Issel. All these riverain valleys along the coast of Liguria appear to have been submerged towards the close of the Messinian and during the Astian epoch.

BERLIN

Meteorological Society, December 7, 1886.—Prof. von Bezold in the chair.—Dr. Hellmann stated that he had examined the observations of the County Fire Insurance Society in Schleswig-Holstein for the years 1874-83 for the purpose of investigating the question of lightning flashes in this province, and communicated the results of that investigation. As is the case in every other locality in which investigations of this description had been carried out, it was shown that generally over the whole province of Schleswig-Holstein there is an increase in the amount of damage wrought by lightning for the decade in question. On a comparison, however, of the different districts, it was found that the territory to the south of the Eider had experienced an abatement of damage by lightning, while to the north of the Eider, along the North Sea, and especially in the marshes, there had been a considerable increase. A computation of damage from lightning for one year demonstrated a very decided maximum in August in the continental, southern, and south-eastern districts, whereas in the north and west a summer maximum of less intensity and two still weaker maxima in May and October became apparent. In respect of a daily period it appeared that in the case of the first group of districts a maximum appeared in the hours from noon to 3 in the afternoon, while in the remaining part of the province the maximum was attained from midnight to 3 in the morning. This night maximum was specially characteristic of winter. The frequency of thunderstorms had no relation to the danger from lightning. The number of destructive lightnings depended in large part on the way in which the houses were roofed. The number was considerably greater in the case of soft than of hard roofs. In the case of churches the danger from lightning was 39 times, in the case of windmills 52 times, as great as in the case of houses having hard roofs. In regard to the cause of the different degrees of danger from lightning in the different districts, investigation indicated two points as determinative: first, the way in which the ground was built upon, and second, the geological nature of the ground. Whilst in the west, which was

very liable to destructive strokes of lightning, the farmsteads were detached and scattered over the whole land; in the east and south they were grouped together into villages, and the danger from lightning was always considerably less for larger collections of houses than for scattered houses forming the only prominent objects throughout wide spaces. In point of fact, the danger from lightning was everywhere considerably less for towns than for rural districts. With reference to the geological bearings of the question, the danger from lightning was least for calcareous sand and greatest for clay. Dr. Hellmann had likewise discussed the statistics of lightning for Baden and Hesse Darmstadt, with the result that he found during the period investigated a considerable increase of damage by lightning for the southern part of Baden, and a decrease for the north of Baden and for Darmstadt. Besides a confirmation of the results arrived at for Schleswig-Holstein there appeared in the Baden-Darmstadt region a decided preponderance of danger from lightning in the Rhine plain as contrasted with a very low degree of danger in the mountains.

BOOKS AND PAMPHLETS RECEIVED

Notes of a Naturalist in South America: J. Ball (Kegan Paul and Co.).—United States Commission of Fish and Fisheries, Report, 1884: (Washington).—Berichte von dem Erzbischöflich-Haynaldschen Observatorium zu Kalocsa in Ungarn: C. Braun (Münster).—The Steam-Engine: G. C. V. Holmes (Longmans).—The Esclapiad, No. 13, vol. iv. (Longmans).—Quarterly Journal of Microscopical Science, January (Churchill).—Brain, January (Macmillan and Co.).—Journal of the Statistical Society, December (Stanford).

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