

photosphere, but rather to the inaccuracies of measurement which inevitably attend such very difficult observations. In observations of the contacts on the solar border by means of the micrometer, there are two principal sources of error, the influence of which may sensibly vary from day to day; they are: (1) The difference of the conditions between the contacts of the west and east limbs. Prof. Respighi observed first by a micrometer in a faintly illuminated field, and secondly in a highly illuminated one: this is apt to introduce an error variable from day to day into the observations of the same person, in proportion to the clearness or transparency of our atmosphere, and will probably become greater when the sky is less clear. (2) From the state of undulation of the solar limb, variable from day to day, there may result a sensible and variable increase of the extent of the disc or diameter of the sun. These influences will not be excluded by the proficiency of the observer, by the use of good instruments, nor by the chronographic registration of the contacts. For the purpose of more thoroughly studying these variations, and investigating their origin, recourse was recently had to the spectroscopic combination of Father Secchi, by which the solar limb or image was obtained, formed by monochromatic or almost monochromatic rays; and from a series of observations made with this apparatus it was found that the solar diameter was less by '6" than that given in the *Nautical Almanac*. Hence it has been inferred that by depriving the solar disc or diameter of the influence of the chromosphere its extent is diminished by about 8" from that obtained by means of the telescope. And therefore it has been inferred that the variations in the solar diameter very probably depend on the variable increase produced on it by the chromosphere, in relation to the extent and intensity of light and the varying state of transparency of our atmosphere. Prof. Respighi, after having shown how the light of the chromosphere could not make any sensible difference to an image of the solar limb or disc, expounded the results obtained from various observations, made by him on the solar diameter by means of the spectroscopic combination alluded to, both with the objective and direct-vision prisms, applied in front of the slit of the spectroscope, using every precaution to exclude the various sources of error. From these observations it results that the duration of the passage of the solar diameter is essentially the same, taking the contacts at the various spectral lines, B, C, D, E, F, and that the measurement agrees very closely with that of the *Nautical Almanac*. The same result is obtained in determining the duration of the passage of the solar limb by means of the slit of the simple spectroscope. Hence Prof. Respighi concludes that while the difference between the solar diameter, as given by the spectroscope and that given by the telescope alone has not been proved, so the suspected origin of this difference is inadmissible, and therefore also any daily variations in the solar diameter.

## VIENNA

I. R. Geological Institute, Jan. 7.—Contributions to a more accurate interpretation of fossil vegetable remains from the salt-stock of Wieliczka (Galicia), by M. Dionys Stur. By dissolving in water pieces of salt from Wieliczka, which included vegetable remains, M. Stur succeeded in getting the latter in a state of preservation and purity which permitted an accurate examination; his very interesting inquiries rectify in many points the determinations made by one of the first authorities in fossil botany, Prof. Unger, who many years ago had given a description of these remains in the first volume of the memoirs of the Vienna Academy. To the most frequent of them belong pine-nuts; besides the one species, *Pinus salinarum* Partsch, described by Unger, Stur discovered two other species: *P. polonica*, which is allied to the existing *P. Massoniana* Lamb, and the larger, *P. Russeggeri*, resembling the *P. rigida* Mill. A very curious fact is noted in connection with these cones; while many of them are perfectly well preserved, many others were found with scales gnawed or bitten off, exactly in the same manner as squirrels (*Sciurus*) demolish the pine-nuts of our forests in order to get their seed corns. Pine-nuts which were not quite ripe are bitten on one side (the sun-side) only, while perfectly ripe nuts are demolished to the basis, which then shows a deceptive likeness with the cupula of an acorn. Indeed the two vegetable remains described by Unger as the cupulae of *Quercus Saturni* and *Q. limnophila* are but pine-nuts destroyed in the same manner: moreover the oak-apples themselves, mentioned by Unger, have proved to belong to quite different plants. The so-called nut of *Q. glans Saturni* Unger, is the nut of *Carya*

*costata* Sternb, which is also gnawed by a squirrel, whilst the nut taken by Unger for the fruit of *Q. limnophila*, is the fruit of a palm very similar to that of the existing *Raphia taedigera*, and is named by Stur *Raphia Ungerii*.—K. v. Hauer gave a description of the large quarries in the tertiary limestone of Zogelsdorf in Austria; in former years they had furnished almost all building stones for Vienna, especially for the famous tower of St. Stephen. Upon the discovery of a very good building stone nearer to the town in the Leitha mountains the quarries of Zogelsdorf decayed, but as soon as the Franz-Joseph railway, which passes very near the spot, made cheap transport practicable, they were reopened by the present possessor, Baron Suttner, and are worked now very extensively.—Dr. G. Stache described an earthquake which was felt in Vienna on January 3, some minutes before 7 o'clock in the evening. In some parts of the town, for instance in the working rooms of the Geological Institute, in the palace of Prince Liechtenstein two shocks were observed, the second tolerably vehement, with a rolling noise. The direction seemed N.W. to S.E.; the duration of the phenomenon was about four seconds.

## DIARY

## THURSDAY, FEBRUARY 27.

ROYAL SOCIETY, at 8.30.—On Leaf-Arrangement: Dr. Hubert Airy.  
SOCIETY OF ANTIQUARIES, at 8.30.—Northamptonshire Star-Chamber Proceedings; Temp, James I.; W. H. Hart.  
ROYAL INSTITUTION, at 3.—On the Artificial Formation of Organic Substances: Prof. Rutherford.

## FRIDAY, FEBRUARY 28.

ROYAL INSTITUTION, at 9.—On Livingstone's Explorations in Africa: Sir H. C. Rawlinson.  
QUEKETT CLUB, at 8.  
ROYAL COLLEGE OF SURGEONS, at 4.—Extinct Mammals: Prof. Flower.

## SATURDAY, MARCH 1.

ROYAL INSTITUTION, at 3.—On the Philosophy of the Pure Sciences: Prof. W. K. Clifford.

## MONDAY, MARCH 3.

ENTOMOLOGICAL SOCIETY, at 7.  
LONDON INSTITUTION, at 4.—Physical Geography: Prof. Duncan.  
ROYAL COLLEGE OF SURGEONS, at 4.—Extinct Mammals: Prof. Flower.  
ROYAL INSTITUTION, at 2.—General Monthly Meeting.  
CANTOR LECTURES, at 8.—On the Energy of Electricity: Arthur Rigg.

## TUESDAY, MARCH 4.

ANTHROPOLOGICAL SOCIETY, at 8.—On the Looshais: Dr. A. Campbell.— Implements and Pottery from Canada: Sir Duncan Gibb, Bart, M.D.— The Venetian Flints: Hodder M. Westropp.  
SOCIETY OF BIBLICAL ARCHÆOLOGY, at 8.30.  
ZOOLOGICAL SOCIETY, at 8.30.—On the Spiders of St. Helena: Rev. O. P. Cambridge.—On some Marine Mollusca from Madeira: R. B. Watson.  
ROYAL INSTITUTION, at 3.—Forces and Motions of the Body: Prof. Rutherford.

## WEDNESDAY, MARCH 5.

SOCIETY OF ARTS, at 8.—On Gas-lighting by Electricity, and Means for Lighting and Extinguishing Street and other Lamps: W. Lloyd Wise.  
MICROSCOPICAL SOCIETY, at 8.—Notes on the Micro-Spectroscope and Microscope: E. J. Gayer.  
LONDON INSTITUTION, at 7.—Musical Lecture.  
ROYAL COLLEGE OF SURGEONS, at 4.—Extinct Mammals: Prof. Flower.

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