

Jacobi's collection, and affected them with a putrefactive disease analogous to that of the potato, in which a *Peronospora* also takes part.—A note by M. E. F. Marey, "On the mechanism of the flight of birds," was communicated by M. H. Sainte-Claire Deville, to which we have adverted in another column.—A note by M. E. Perrin, presented by M. de Quatrefages, contained observations on the scissiparous reproduction of the *Naidea*, as evinced in the genus *Lero*.—Other papers communicated were a note by M. Yvon Villarceau, "On the decimal division of angles and of time;" a note by M. Morache, "On the use of creosote in the treatment of typhoid fever;" one by M. Pegrani, "On the relation of the sympathetic nerve to the secretion of urine;" and one by M. Duboux, "On a new sign of death."

BOSTON

Natural History Society, March 16.—The secretary read the following observations of Mr. L. Trouvelot, upon the tendency of trees to bend toward the east. In the *Scientific American*, of March 5th, 1870, is inserted a paragraph headed "The Growth of Tree Trunks." It is there stated that a French naturalist had been measuring the tree trunks in a forest, and had found them all broader in the east-west than in the north-south direction, while another arborist of Toulouse, similarly gauging the trees, found the greatest swelling of their trunks towards the east-south-east; the former attributing this want of symmetry to the rotation of the earth, while the latter thinks that it is due to the early action of the sun upon the sap. As this paragraph reminded me of some observations which I made some five or six years ago, and which bear closely upon the same subject, I will present them to the society, thinking they may have some value in a scientific as well as in a practical point of view. While in the country, if we observe attentively the tree tops, we shall soon perceive that many species seem affected by a steady wind, though there is not the least breeze to be felt. Soon we notice that the branches of a great many trees have a general tendency to obey an unknown force which bends their extremities towards the east, or perhaps more correctly, in a direction perpendicular to the magnetic meridian. This bending of small branches cannot be observed so plainly upon all kinds of trees; some species having it well marked in every instance, while other species have it less visible, and even some others not at all noticeable. Most prominent for this peculiarity is the cherry tree, sometimes bending its branches towards the east, from head to foot. Next to this come the maple, the button wood tree (*Platanus*), then the pear tree, then the oak, etc. In the last named it is not always noticeable, though if the tree is isolated from others it is very plain in every instance. With the cherry tree it is so certain, that one could almost invariably determine the cardinal points by looking at the direction of its branches. At first I thought this might be due to the action of the prevailing winds, but this hypothesis was somewhat shaken, when I saw in many instances cherry trees sheltered entirely from the west winds by high blocks of houses within a few feet of them, exhibiting the same phenomenon. Whether this direction of the branches of trees is to be attributed to the prevailing winds, or to the rotation of the earth upon its axis, or to the heat or light of the sun, or again, to terrestrial magnetism, I shall not inquire at present, not having sufficient data to establish any theory. It would be of value, I venture to say, if observers would direct attention to this subject, and see if the direction is the same all over the globe, or if it is a local phenomenon, and also ascertain what species of trees obey this unknown force. It is not only in a theoretical point of view that this observation has some value; there is in it a practical lesson for the cultivators of shade and fruit trees. Soon after my observations, it struck me that something practical could be derived from this truth. All country people know by experience—sometimes dearly bought—that the transplantation of trees does not always succeed, and especially when the transplanted trees have arrived at a certain age. Fruit growers tell us that the cherry tree is one of those least likely to live when transplanted, while the apple tree will almost invariably succeed. My observations on many thousand cherry trees have shown me that this tree is very sensitive to the unknown force, while the apple tree is a great deal less so, and it is very seldom that an indication of bending will be seen. Has not this anything to do with success in transplanting? If, without regard to the direction of the branches of a cherry tree, we set this tree in a position contrary to the one it occupied before, its branches now bending towards the west, then it is plain that the force which gave it the bend is acting in an opposite direction, in consequence of

which the tree is suffering. But with the apple tree it is different, as this is far less sensitive; therefore it will not suffer much. Ten years ago I bought a fine cherry tree and transplanted it to my garden, of course without regard to direction; the tree is now living; it has not grown a particle: there has not been one inch of new wood added to the length of its twigs since it was put there; the branches have no bend. Five years ago another cherry tree from the same place was also transplanted in my garden; the tree is now treble the size of the other, its branches are strongly bent east. Why this difference? Was the one set in a suitable position, and the other not? I could not tell. But here is something more positive. Three years ago I saw in Malden twenty beautiful pear trees transplanted with the greatest care; all these trees were of pretty good size, being some years old, and they all bent very strongly. They were set without regard to direction; five or six of these trees happened to be placed in about the position which they must have had when growing, the remainder were set in all directions. I went many times that way to watch the success of this small orchard. The very first year about one half were completely dead. The second year took five more, which had been languishing all the summer, and now five out of the twenty are living and in good condition, and strange to say, these five are those which were set with their branches dipping east. Do we owe their life to the fact that after being transplanted they occupied the same relative position with regard to the points of the compass as before, or is it only a curious coincidence? It is more than I can tell. My experience is not sufficient to allow an opinion in this matter; time will throw light upon the subject.

DIARY

- FRIDAY, JULY 1.
GEOLOGISTS' ASSOCIATION, at 8.
- SUNDAY, JULY 3.
SUNDAY LECTURE SOCIETY, at 8.—On Man's Cruelty to Man: Rev. Allen D. Graham.
- MONDAY, JULY 4.
ENTOMOLOGICAL SOCIETY, at 7,
LONDON INSTITUTION, at 4.—Botany: Prof. Balfour.
ROYAL INSTITUTION, at 2.—General Monthly Meeting of Members.

BOOKS RECEIVED

- ENGLISH.—Guide to the Western Alps: J. Ball (Longmans).—Treatise on the Astrolabe of Chaucer: A. E. Brae (J. R. Smith).—On the Manufacture of Beet-root Sugar: W. Crookes (Longmans).—A Glance at some of the Principles of Comparative Philology: Lord Neaves (Blackwoods).—Technological Dictionary (English-German-French), edited by E. Althaus (Williams and Norgate).—Astronomical Observations taken during the years 1865-1869 at the Private Observatory of J. G. Barclay (Williams and Norgate).—Westward by Rail: W. F. Rae (Longmans).
- FOREIGN.—(Through Williams and Norgate).—Petit traité de physique; 1^{re} fascicule: M. J. Jamin.—Bryozoi fossili Italiani; 3^a Contribuzione: D. A. Manzoni.—Reactions Schema für die qualitative analyse zum Gebrauche in chemischen Laboratorium zu Berlin.—Jahresbericht über die Fortschritte der Chemie: A. Strecker.—Archiv für mikroskopische Anatomie: M. Schultze.—Vorweltliche Pflanzen aus den Steinkohlengebirge der preussischen Rheinlande und Westphalen: Dr. C. J. Andrea.—Phanologische Beobachtungen aus dem Pflanzen und Thier-reiche: Karl Fritsch.—Anuales del Museo Público de Buenos Aires: F. Savy ed Autor.

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