

from the south, and there is no difference in the character or appearance of the moraines left on both sides of the equator. Second, because, excepting on the supposition that the ice extended, at least along some meridians, both from the south and the north nearly to the equator, at the same time, we cannot explain the distribution of those animals and plants that are found in the temperate zones of both hemispheres, separated by the whole width of the tropics, over which they cannot now pass. For example, there are more than forty flowering plants of North America and Europe which are also found in Terra del Fuego. Darwin's theory that these plants were driven to the high lands of the tropics during the glacial period, and followed the retreating ice in its retrocession, must fall to the ground if the ice did not exist in both hemispheres at the same time. (See "Origin of Species," p. 405, &c.)

10. The piling-up of water around the poles in the form of ice could not fail to affect the level of the ocean. Mr. Alfred Tylor has calculated that the accumulation of the ice in the northern hemisphere alone would abstract so much water as to lower the level of the sea 600 feet; and if, as I believe, the glacial period occurred at the same time in both hemispheres, the level of the ocean must have been lowered at least 1,000 feet.

11. The theory of the lowering of the level of the sea during the glacial period is directly opposed to the generally accepted one of a great submergence of part of England and Scotland to a depth of about 2,000 feet, when the marine shells of Moel Tryfaen and Macclesfield were deposited. The facts on which this theory of submergence is based can be otherwise explained. The shells are broken or worn, and generally mixed amongst other transparent materials. They are just where they ought to be found on the supposition that an immense body of ice coming down from northern Ireland, from Scotland, and from Cumberland and Westmoreland, filled the basin of the Irish sea, scooped out the sand with the shells that had lived and died there, and thrust them far up amongst the Welsh hills that opposed its course southward and around the great bight of which Liverpool forms the apex. Excepting some raised beaches around our coast, which were probably formed after the glacial period, and in no case reach more than 100 feet above the present level, I believe there is no evidence of the submergence of Great Britain either during or since the glacial period.

THOMAS BELT

#### Lakes with two Outfalls

THE subject of double outfalls is of some interest, if only as showing the necessity of accurate observation, and the difficulty of ascertaining the truth in matters apparently of simple fact. In NATURE, vol. ix. p. 485, Mr. W. B. Thelwall brings forward two instances of lakes with double outfalls, and states that he has passed two or three more. Now, as regards that upon the Fille Fjeld, which he describes from personal observation, I beg entirely to call in question his accuracy. I passed the locality during each of the two last summers, and my attention was drawn to the position and nature of the watershed, especially during my visit of last summer, when I had carefully inquired into the asserted existence of a natural double outfall at the Lesjeskaagen Vand. (See NATURE, vol. viii. p. 304; also Colonel Greenwood's and Mr. R. B. Hayward's letters, NATURE, vol. viii. p. 382.)

Mr. W. B. Thelwall says:—"Between Nystuen and Skogstad is a chain of lakes crossing the watershed, the highest of which (not the one marked on the Vei-cart over Norge, I think), sends its waters to the west, past Nystuen to the Sogne Fjord, at Lærdalsøren, and on the east by the Lille Mjösen, and Aadalen to the Tyrifjord, and so past Drammen to the Christiania Fjord. This lake is a small one, and the double outflow is close to the high road."

Now this statement is inaccurate in all the essential details. The division of the waters is *not* between Nystuen and Skogstad, but on the other side of Nystuen between it and Maristuen. The water which passes Nystuen does *not* flow towards the west to the Sogne Fjord, but to the east towards the Lille Mjösen, as I carefully ascertained when I was staying at Nystuen. This is rendered certain, too, by the fact that the land rises to the west of Nystuen, the actual division of the waters being about 100 or 105 feet, by my aneroid barometer, above Nystuen. Moreover, having scrambled up a steep mountain close behind Nystuen, whence the view on a clear day is of the wildest character, I had a bird's-eye view of the whole district in debate, and examined it carefully with a good field-glass, with a view to detecting any

evidence of a double outflow. I came to the conclusion that the division of the waters took place in the boggy bottom of the valley to the west of Nystuen, and that it would be impossible to say exactly where it was. To the westward of this boggy place is indeed another lake, of which the waters flow to the Sogne Fjord; but this lake is several miles to the west of Nystuen, and separated from it by dry land, rising 100 feet or more above the levels of the water in the two lakes.

Whether lakes with two outflows exist or not, it is difficult to avoid feeling that Colonel Greenwood was warranted in his former incredulity upon the subject. W. STANLEY JEVONS

#### Trees Pierced by other Trees

UNDER this heading your correspondents discuss two distinct questions as if they were the same, namely the piercing of the stem of a tree by the head of another, as supposed by Mr. Murphy, and the growth of the *root* of a plant in or on another tree. Nothing can be more common than this last. Wherever soil aggregates the roots of seeds will grow as a matter of course. More than this, trees will strike roots into soil collected in their own forks, as I can show here, or down the rotten wood of their own trunks. A remarkable case of this may be seen in a yew tree in West Tisted churchyard near here. But nothing can be more opposite than the growth of the root and that of the head. The root grows to darkness; the head to the light.

Alresford, May 11

GEORGE GREENWOOD

[This correspondence must now end.—ED.]

#### The supposed Antipathy of Spiders to Chesnut Wood

SOME years back, while walking in the cloisters of New College, I remember a resident Fellow (since deceased) telling me that spiders were never known to occur in the woodwork of the roof, and attributing their absence to the chesnut timber, of which it was framed.

It has been asserted that this wood, which was formerly supposed to be that of the chesnut, really belongs to *Quercus sessiliflora*, but I do not know if that is still held to be the case.

The roof of Westminster Hall was at one time considered to have been constructed of chesnut; has any such story been heard of in connection with it? R. A. PRYOR

13 Bury Street, S.W.

#### AN EXPERIMENTAL OBSERVATION ON HAY FEVER\*

THE accompanying brief but most interesting paper was received a day or two ago. Believing that it may bring relief to those who during the coming warm weather may be attacked with hay fever, Prof. Tyndall forwards it, with his compliments, to the editor of NATURE.

From what I have observed (says Prof. Binz) of recent English publications on the subject of hay fever, I am led to suppose that English authorities are inaccurately acquainted with the discovery of Prof. Helmholtz, as far back as 1868, of the existence of uncommon low organisms in the nasal secretions in this complaint, and of the possibility of arresting their action by the local employment of quinine. I therefore purpose to republish the letter in which he originally announced these facts to myself, and to add some further observations on this topic. The letter is as follows:—

"I have suffered, as well as I can remember, since the year 1847, from the peculiar catarrh called by the English 'hay fever,' the speciality of which consists in its attacking its victims regularly in the hay season (myself between May 20 and the end of June), that it ceases in the cooler weather, but on the other hand quickly reaches a great intensity if the patients expose themselves to heat and sunshine. An extraordinarily violent sneezing then sets

\* By Prof. Binz, of Bonn.

† Cf. Virchow's *Archiv*, vol. xlv. p. 100.