

Devonian, and Cretaceous age. They also made many valuable observations on the superficial deposits, as well as on the physical geography of the region. An interesting point in their report is the frequency of old beaver-dams in places where there is now little or no water—an evidence of the former greater humidity of the climate.

In British Columbia Mr. James Richardson continued his explorations. He traversed metamorphic crystalline rocks (auriferous) extending over seven degrees of latitude and six of longitude. The complicated structure of the Nanaimo coalfield was further investigated, but the work is not yet complete.

Mr. J. Lionel Smith reports on the salt manufacture and trade of Ontario, and makes some interesting and useful comparisons between the various processes for the treatment of the brine in Canada and elsewhere.

Mr. J. Harrington closes the volume with notes on Canadian rocks and minerals.

R. L. JACK

The Schools of Forestry in Europe. A Plea for the Creation of a School of Forestry in Connection with the Arboretum at Edinburgh. By John Crombie Brown, LL.D., &c. (Edinburgh: Oliver and Boyd.)

THIS pamphlet is written in the form of a letter or address to the Lord Provost of Edinburgh and the promoters of the Arboretum at Inverleith, and is in short a strong argument in favour of the formation of a school of Forestry to be connected with the Arboretum. Dr. Brown shows that in France, Spain, Italy, Austria, Poland, Russia, Finland, Sweden, and in fact in almost every country except Great Britain, its Colonial dependencies and the United States of America, such schools exist under Government authority, and it is in these very countries that such schools would be of immense utility. The proposed curriculum of three years' study sketched out by Dr. Brown as likely to prove advantageous is, in the main, good, but we think that the French and German languages should be taken before the end of the third year. The notices of the arrangements and systems of studies in the various Continental forest schools are not without interest. Dr. Brown concludes his "plea" with a comparison of the English and Continental forests; the extent of the latter, together with the threatened lack of fuel by the extinction of forests as against our supplies of this necessary article from coal mines, being, no doubt, among the principal causes of the decrease of forest training in this country. The lack of special literature on the subject in the English language also compares badly with that of the Continent.

Unser Sonnenkörper nach seiner physikalischen, sprachlichen und mythologischen Seite hin betrachtet. By Dr. Schmidt. (Trübner, 1877.)

DR. SCHMIDT has more learning than method. In fact, he belongs to that school of paradoxers who are less common in Germany than in this country. He proposes to show that the sun is a cold inhabited body, heat being developed by the friction of its rays against the earth and other celestial bodies. Upon this physical theory he superimposes his mythological one. Words which have a slight resemblance in sound and meaning are gathered together from all parts of the world and assumed to be connected in spite of their belonging to different families of speech. Out of this hodgepodge are extracted such conclusions as that the sun-god was believed to illumine the dead in Hades or that the snake represented the return of Apollo to the light of day. But the philology of the writer may be easily appreciated when we find him speaking of "the Armeno-Caucasian family, to which belong not only Semites and Arians, but also some Turanian tribes," and intimating that the roots of the Chinese language are allied to those of the "Armeno-Caucasian." As might have been expected, Dr. Schmidt

is not always right in the words he quotes from the numerous languages, ancient and modern, which he has laid under contribution.

LETTERS TO THE EDITOR

[The Editor does not hold himself responsible for opinions expressed by his correspondents. Neither can he undertake to return, or to correspond with the writers of, rejected manuscripts. No notice is taken of anonymous communications. The Editor urgently requests correspondents to keep their letters as short as possible. The pressure on his space is so great that it is impossible otherwise to ensure the appearance even of communications containing interesting and novel facts.]

Passage of Plants Across the Atlantic—*Haplomitrium hookeri*, Lyell

PROF. UNGER arrived at the conclusion that in Tertiary times there was a passage of plants from America to Europe. A plant found by myself last year in the Island of Dominica, West Indies, led me to think it probable that there had been an extension of at least one plant in the opposite direction. The plant to which I refer is one of the Hepaticæ, *Haplomitrium hookeri* of Lyell. It differs so much from other Hepaticæ that I was able approximately to identify it on the spot where I found it in considerable abundance. Should it prove to be specifically distinct, my remarks may still, to some extent, hold good. It was growing in a dark, moist, shady spot on the north side of a mountain at an elevation of about 4000 feet. *H. hookeri* is generally distributed over the North of Europe, but I cannot find that it has ever before been found out of Europe. Dr. Oliver kindly informs me that there are only European specimens in the herbarium at Kew. I have failed in obtaining information of its occurrence either in North or South America, or in the intermediate islands. Nees ab Esenbeck, in his "Synopsis Hepaticorum," whilst recording a large number of Hepaticæ from the West Indies, mentions *H. hookeri* only from Europe. Now it is by no means an inconspicuous plant, and it seems altogether unlikely to have been overlooked by such careful observers as Swartz and others who have studied the Hepaticæ of the West Indies. Hence I draw the following inferences, to which may be attached a greater or a less amount of probability.

1. That the biological centre for *H. hookeri* is Northern Europe.
2. That it has thence crossed the Atlantic in a rather narrow zone.
3. That it did not reach the Continent of America. This, of course, is subject to correction. It may have been found there. From the great extent of territory and variety of climate on the mainland, I think if it had ever reached America it would still be found there.
4. That it may have reached the West Indies and have died out from Cuba, Jamaica, and other islands, through the prevalence of dry seasons, before the lower Cryptogamic plants were studied by competent botanists.
5. That it has remained in Dominica because of the altogether peculiar moisture of the climate in that island.
6. That it has not hitherto been found in Dominica because, from some reason unknown to myself, botanists seem to have neglected this true pearl of the Antilles, matchless in the beauty of its natural scenery, and in the wealth of its Cryptogamic flora.

H. hookeri is noticed as peculiar in not recovering its freshness when moistened after having been dried. This I found to be the case. On being carefully moistened about eight months after it was collected and dried, it remained flaccid, whilst the rest of the mosses and Hepaticæ from Dominica, when similarly treated, looked as fresh as when they were gathered. But *H. hookeri* exhibited another peculiarity even more remarkable, for it alone of all the Muscinæ that I brought home, grew and produced fruit after so long a period of desiccation. The fruiting parts of a specimen which I sent to the herbarium at Kew were entirely developed in a moist case on the table at which I am now writing. It seems as if the plant, incapable of the imbibition or intussusception of moisture sufficient to restore the freshness of its foliage, nevertheless retained, in a very unusual degree, its capacity for such development as might secure the continuance of its species. Such a speciality no doubt favours the suggestion that *H. hookeri* may have crossed from the East, but I confess myself inclined to be suspicious when coincidences run too much on "all fours." I found many mosses in Madeira and several lichens in Jamaica, which I have been quite unable to distinguish from British species. These may be common cases of widely distributed forms. *H. hookeri* does not appear to be of this class.

HENRY H. HIGGINS

Rainhill, May 2