

and the whole of the electrical conducting materials are suitable to its demonstrations.

The one represents a patentable improvement, the other a discovery too great and of too wide bearing for any one to be justified in holding it by patent, and claiming as his own, that which belongs to the world's domain.

D. E. HUGHES
London, July 2

Insects Corroborative of the Nativity of Certain Plants

WHETHER certain plants are, or are not, natives of Britain is a question that often exercises botanists, and any new evidence on the subject is always acceptable. It has recently occurred to me that a certain kind of evidence may be obtained by studying the insects attached to such plants. The question is one of interest not only to phyto- but also to zoo-geographers; for if the species of plant to which an insect is restricted is proved not to be indigenous then the insect cannot be indigenous either. If, on the other hand, the plant is only doubtfully an alien, and the insect is not one that might be easily introduced, then the probability is that the plant is a true native.

The plant that has suggested this idea to me is the wild or yellow balsam, *Impatiens noli-me-tangere*. This plant is reported from twenty-seven counties or vice-counties, but in most of these it seems to be admittedly an "introduction." Mr. H. C. Watson, the indefatigable author of the "Cybele Britannica," &c., seems to think that its claim to being indigenous is very slight, for he writes ("Topographical Botany," part 2, p. 607):—"If the *Noli-me-tangere* be really native here it must be so very locally: say, in North Wales and Westmoreland." Sir J. D. Hooker ("Student's Flora," first edition, p. 80) says, "Probably wild in North Wales, Lancashire, and Westmoreland;" Prof. Babington ("Manual," seventh edition, p. 72) does not mark it as an introduction, but Hooker and Arnott ("British Flora") regarded it with doubt; finally Hudson ("Flora Anglica," 1762, p. 332) thought it in his day truly wild in Westmoreland. It is evident, therefore, that the *Impatiens noli-me-tangere* is looked upon with suspicion by many of the present race of botanists, and probably rightly so in many of the "stations."

There are two species of Lepidoptera attached to this plant, and, I believe, restricted to it. One of these—*Lygris reticulata*—has been for a number of years known as a native of Westmoreland, where, on the banks of Windermere, it occurs very rarely. Its connection with the *Impatiens* in this country was not, however, known till very recently, when Mr. J. B. Hodgkinson, a well-known Yorkshire naturalist, traced it to its headquarters amongst the plant, where he also, still more recently, found the other Lepidopteron—*Penthina postrema*—which is attached to the balsam. Both of these insects are far from common (though *Lygris reticulata* is, like its food-plant, widely distributed—even as far as Siberia), and their occurrence in Westmoreland seems to me conclusive that the *Impatiens* is really indigenous there.

As apparently opposed to my theory, it must not be forgotten that there are several plants, certainly introduced into Britain, which have insects attached and restricted to them. Amongst others are the spruce-fir and the larch. On the spruce the following insects occur: *Eupithecia togata*, *Semasia nanana*, *Asthenia strobilella*, *Coccyx hercyniana*, &c., and on the larch *Eupithecia lariciata*, *Boarmia crepuscularia*, *Spilonota lariciana*, *Coleophora laricella*, &c. But it must be remembered that the spruce and larch are perennial trees (while the *Impatiens* is an annual plant), and that they are frequently imported in the form of young trees, or as undressed timber, and sent hither and thither all over the country. Hence the insects attached to them have many chances of being introduced, and of establishing themselves where the conditions are favourable.

It is possible that some of the insects I have last mentioned may have transferred themselves from the native conifers to the introduced ones, but I do not think this is likely. A few species live on the introduced as well as the native trees, as, for example, *Myelois abietella*, upon scots-fir and spruce, and the rare beetle *Dendrophagus crenatus*, upon scots-fir and larch, as I noticed when investigating the natural history of Aberdeenshire some years ago.

It is desirable that all the "stations" in which there is any doubt about the introduction of the *Impatiens* should be searched for the insects mentioned above, for it is not likely that they

are confined to Westmoreland; and should they be found in any other locality, the probability is, it seems to me, that there the plant is really indigenous.

F. BUCHANAN WHITE
Perth, July 5

Physical Science for Artists

SOME years ago, in Madeira, we had been watching a glorious sunset from the hills above Funchal; and, on turning to go eastward, we saw the sky before us suffused with a bright rosy tint, which ended abruptly beyond the Desertas, at some little distance above the horizon-line of the Atlantic.

At first it did not occur to us what was the cold blue-grey form that rose into the pink flush above, slowly losing its definition of outline as it gradually grew higher.

But this strange silhouette had so distinctly mountain outlines that, almost at once, we recognised the fact that we were looking at the shadow of Madeira cast by the setting sun on the mist.

This phenomenon may not be unusual, but I do not recollect having seen it described; and it is perhaps sufficiently different from the phenomena described by Prof. Brücke and Mr. F. Pollock to be worth recording.

G. HUBBARD

Remarkable Form of Lightning

I AM able to confirm the fact that lightning occasionally takes the "punctuated" form described by Mr. Joule in NATURE, vol. xviii. p. 260. Some forty years ago, in a thunderstorm which I had the good fortune to witness at Ampton, in Suffolk, the lightning (with heavy rain) was almost incessant for half an hour or more, and about a quarter of the flashes (speaking from memory only) presented this unusual appearance. I have often looked out for it since, but only once with success, and then it only showed itself in a single flash out of many. On both occasions the "punctuated" flashes presented in general a curved or sinuous line without sharp angles; and two or three of them in the first-mentioned storm appeared to my eye as closed curves, one an almost perfect figure of 8; but their dazzling brightness made it impossible to speak to this with certainty.

London, July 8

E. J. LAWRENCE

Microscopy. The Immersion Paraboloid

THE immersion paraboloid illuminator exhibited at the recent *soirée* of the Royal Society as designed by me, proves to have been anticipated in principle and construction by Dr. John Barker, of Dublin, from whom a paper on the subject will be found in the *Proceedings* of the Royal Irish Academy for 1870.

An immersion paraboloid illuminator was also described by Mr. Wenham in the *Transactions* of the Royal Microscopical Society for 1856. My paper on the subject appeared in the *Monthly Microscopical Journal* for August, 1877, but that journal being defunct, I ask you to allow me to credit these gentlemen with a priority which, on perusing their papers, I find to be due to them. I ought to add that, until the construction by Messrs. Powell and Lealand of my illuminator, the device had never come into practical use, and that, so far as I can learn, no reference to it exists in any optician's catalogue or textbook on the microscope.

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Review of Henfrey's Botany

ALLOW me to correct an error which Mr. Bennett has made in his review of "Henfrey's Elementary Course of Botany" (NATURE, vol. xviii. p. 217). He adds a note as follows:—

"Evidently by an error of the press, the continued fraction of which the most common angles of divergence are successive convergents, is given as $\frac{1}{2} + \frac{1}{1} + \frac{1}{1}$, instead of $\frac{1}{2} + \frac{1}{1 + \frac{1}{1}}$, &c.,

a correction needful to render the sentence intelligible to the student."

My note (p. 44) is as follows:—

"The mathematician will observe that these fractions are the successive convergents of the continued fraction $\frac{1}{2} + \frac{1}{1} + \frac{1}{1}$, &c."

I subjoined it for the sake of mathematical students only, who would know what Mr. Bennett does not seem to be aware of, that the method of writing the continued fraction I have adopted,