

leading farmers of South Africa. May not the glut in ostrich feathers to which Prof. Duerden refers have been caused by "fashion" showing a sudden preference for those other plumes of which the sale might soon have been prohibited by law?

Naturally, the French *plumasserie* is hostile to us. That, we think, is more than counterbalanced by the sympathy of distinguished and disinterested Frenchmen like M. Harancourt, curator of the Musée de Cluny, and of various French and Italian societies for the preservation and protection of birds and animals.

WILLOUGHBY DEWAR,

Hon. Sec. Plumage Bill Group.

8 Kenilworth Court, Putney, S.W.15,

January 25.

### The Separation of Isotopes.

IN view of recent work by Ashton, the practical aspect of this problem again becomes important. Considerable weight must be given to the conception of Lindemann and Ashton (*Phil. Mag.*, May, 1919) that isotopes are capable of chemical as well as of physical separation.

As it is extremely improbable that I shall be able to return to practical work in radio-chemistry in the near future, I wish to put on record what seems to be a further very exact method of testing the chemical separability of isotopes.

If an ester—for example, ethyl acetate—is heated with a base—for example, a solution of barium hydroxide—the ester will be saponified and the barium salt precipitated. The reaction is, of course, a fairly slow one, and the precipitated salt can be filtered off from time to time.

The fraction of ester saponified in any given time is proportional to the concentration of hydroxyl ion. If, therefore, in place of pure baryta a solution of barium hydroxide containing a small quantity of radium hydrate with one of its isotopes, say mesothorium-1, is used, we shall get a precipitate containing barium radium and mesothorium-1. The quantities of these two elements precipitated are capable of exact measurement, and will depend on the strength of their bases. The results obtained will thus be independent of any phenomenon such as solution, which is neither a clearly defined physical property nor yet solely a chemical one, but will be dependent on a purely chemical phenomenon, namely, the strength of the base and its consequent relative power to break up a molecule of the ester. If, therefore, the ratio of radium to mesothorium-1 in the first precipitated fraction is compared with the same ratio in a later fraction, a comparison will have been obtained of their reactive powers.

ALEXANDER FLECK.

26 Manor House Road, Jesmond,  
Newcastle-upon-Tyne.

### A Helium Series in the Extreme Ultra-Violet.

I FEAR I cannot agree with the arrangement of spectral lines proposed by Dr. Hicks (*NATURE*, December 18, 1919). The evidence shows that the lines he has selected do not all belong to the same element. I tried to make this clear in my article which he quotes (*Astrophysical Journal*, vol. xliii., 1916, pp. 100-1).

My note of November 20 was intended to direct attention to the fact that while the lines 1216, 1026, and 972 are probably due to hydrogen, and form a series predicted by Ritz, the lines 1640 and 1215 are homologous, and are due to helium; 1086 and 992 I ascribe to an impurity.

NO. 2622, VOL. 104]

It seems to me that the proposal of Dr. Hicks illustrates the danger of selecting spectral lines from a table without due regard to their physical characteristics.

THEODORE LYMAN

Harvard University, January 10.

### Mirage Effects.

A NOTICE appeared in *NATURE* of January 1 (p. 458) of a communication to the Royal Society of Edinburgh by Mr. G. F. Quilter respecting mirage in the form of "pools of water" as seen in the street at Ingatestone.

It is highly probable that a similar phenomenon occurs here at Hastings. Sometimes on hot, sunny days, if one walks along the promenade, the ground some distance ahead appears to be dark and polished, as if wet; and vehicles and pedestrians (particularly if the latter have white dresses) are reflected in the surface. On close approach the appearance vanishes.

The phenomenon has been seen elsewhere in this locality, especially on the asphalt at the top of Wellington Road. In this case, when it has vanished, it may be revived by stooping. It seems as if elevation of the eye-level affects visibility.

It has been observed by Mr. W. Ruskin Butterfield, the borough meteorologist and curator of the museum at Hastings, as well as by the writer of this note.

CICELY M. BOTLEY.

10 Wellington Road, Hastings, January 24.

### British Iron-ores.

IN a review in *NATURE* for January 1 (p. 429) Prof. Louis appears to take exception to Sir Aubrey Strahan's division into "three classes, namely, those products, mostly hæmatites, which occur as replacements, in lodes, etc. . . ." It would be well to remember that true lodes or veins of iron-ore *do* occur in Cumberland, as at Knockmurton Mine (disused), where gash-veins of hæmatite occur in the Skiddaw Slate, and in Eskdale, where veins occur in granite, the most important being at Nab Gill Mine. It appears to me that the word "lodes" in the description has no connection with "replacements," but is used to cover such deposits as I have mentioned.

D. A. E. EVANS.

High House, St. Bees, Cumberland,  
January 3.

It is perfectly well known that true lodes of hæmatite occur in various places, those in the Skiddaw slates referred to by Mr. Evans being typical examples; and so far I am in entire agreement with him. My criticism takes no exception at all to Sir Aubrey Strahan's classification, but is directed only to the possibility that some readers of his preface might assume from it that he regards "lodes" and "replacements" as equivalent terms.

HENRY LOUIS.

### Displacement of Spectral Lines.

IN view of the discussion in *NATURE* and elsewhere on this subject, the following extract from a recent letter of Prof. Einstein may be of interest:

"Zwei junge Physiker in Bonn haben nun die Rot-Verschiebung der Spektral-Linien bei der Sonne so gut wie sicher nachgewiesen und die Gründe des bisherigen Misslingens aufgeklärt."

I have heard no details, but doubtless an account of this work will be available before long.

ROBERT W. LAWSON.

The Physics Laboratory, The University,  
Sheffield, January 23.