

of the air above surrounding districts of the coal measures, or statistics of the fertility and periods of fructification of crops under similar differences of conditions. Of course the great difficulty affecting the last point is the difference in the chemical constitution of the soils produced by the decomposition of trap and stratified rocks.

THOMAS STEVENSON

Edinburgh, June 21

Winters and Summers

A FRIEND writes to me:—"From my observations of climate here (Belfast) I should say that I never saw a severe winter followed by a really fine summer. The severest winters I remember were those of 1854-5, and 1859-60. The summer of 1855 was very wet, and that of 1860 deplorable. The finest summers I remember were those of 1842, 1857, and 1868; in every case the preceding winter was very mild."

I would add to this, that the severe winters of 1865 and 1870 were not followed by remarkably fine summers. The harvest weather of 1866 was unusually bad.

Can any of your readers throw light on this subject from carefully kept registers?

JOSEPH JOHN MURPHY

Old Forge, Dunmurry, June 6

Cyclones

MR. MAURY's theory of Cyclones, as stated in NATURE of the 19th, is, in my opinion, true and valuable. I hope you will permit me to call the attention of your readers to my letter in NATURE, Vol. iv. p. 305, where it will appear that I had independently arrived at the conclusion stated by him, "that the origin of cyclones is found in the tendency of the south-east trade-winds to invade the north-east trades by sweeping over the equator into our hemispheres." Only the words "south-east" and "north-east" must exchange places, and "the opposite hemisphere," must be read, instead of "our hemisphere," if we are to apply the theory to the cyclones of the Southern Indian Ocean and of the Southern Pacific. On this latter subject, see Mr. Whitnee's letter in NATURE, vol. vi. p. 121.

I wish, however, to call your attention to what I think an error in the diagram of the winds, which Mr. Maury reprints from Prof. Ferrel. It represents the winds at the surface of the earth in the Polar regions as blowing in nearly the same direction as the trade winds. This appears mechanically impossible, and I cannot think that Prof. Colfin's data are extensive enough as regards the Polar regions. As the late Capt. Maury remarks, the west winds of the higher and middle latitudes constitute "an everlasting cyclone on a great scale;" that is to say, a vast vortex whereof the pole is the centre. But it appears impossible that the direction of the motion of a vortex should be reversed at its centre.

JOSEPH JOHN MURPHY

Old Forge, Dunmurry, June 24

A Mirage in the Fens

As the phenomenon called Mirage is not very common in this country, though more frequent in the Fens, perhaps, than elsewhere, I presume that a description of one which was seen on Thursday, May 29, last, will be interesting to the readers of NATURE.

Driving from Wisbech towards Thorney on the morning named, I stopped at Guyhirne, and my friend, Mr. S. B. J. Skertchley, of H. M. Geological Survey, who accompanied me, mounted the parapet of the bridge of the March and Spalding Railway, to view the Fens from that elevation, and then called my attention to what appeared a beautiful lake spread out a few miles distant. The illusory waters were of a bluish grey colour, and being apparently raised from the level, presented the perspective of a Mere of considerable breadth. But this was not a dull expanse; there were variously formed indentations—lands dotted here and there, pollard willows inverted, and the reflection of tall poplars and elms on the glassy surface. The use of my field-glass only brought these features more distinctly to the eye. As we stood on the bridge, we were looking from W. by S. to W. Whittlesea Church was eight miles distant, and Thorney Abbey seven miles. The mirage was stretched out from Eastern Fen over Prior's Fen to the west of Thorney, i.e. three or four miles. It was 11 o'clock. There was a fresh breeze from N.E.; the sky was not half obscured by cloud; the barometer stood high, being four degrees difference between the

dry and wet bulb thermometers at 9 A.M. All these conditions were favourable to evaporation; there had been more than half an inch of rain the Monday previous. Mr. S. had witnessed a similar phenomenon from another point of view (see NATURE, vol. ii. p. 337) in 1870, when he saw it both E. and W. of his position, but on Thursday last there was not even a mist in any other part of the horizon. On both occasions the wind was N.E. It may be interesting to know whether these phenomena appear with a mild and moist S.W. or W. breeze.

Wisbech, June 5

SAML. H. MILLER

The Westerly Progress of Cities

REFERRING to Mr. W. F. Barrett's letter I would remark that there is a similar phrase, viz. the westerly or north-westerly progress of nations, which is intimately connected with "the westerly progress of cities," and the former helps to explain the latter. As a rule the more westerly of two peoples inhabiting a country is there by compulsion, having been driven thither by the invader who, as a rule, makes the attack from the east. The remnants of the ancient Celtic race, inhabiting portions of the western shores and highlands of Spain, France, and the British Isles, are an evidence of this. We see the same process going on now in America: the aborigines being driven before the invader, to the west. There are insignificant exceptions, both in ancient and modern times, but they only prove the rule.

So much then for the westerly among the peoples of a land: they are in the west by violent compulsion. Among the inhabitants of a city the westerly are there also by compulsion—not a compulsion by violence, but by uncomfortable pressure; in which case it is the powerful or wealthy who retire before the weaker or poorer.

The very fact of the westerly progress of nations establishes the further fact that what becomes afterwards more or less the eastern part of the city is the older and that where the first habitations were erected. An exception would be such a case as a city built on a western coast without any adjacent country to the west. Here the wealthy in retiring before their less fortunate fellow-citizens must necessarily go more or less to the east.

B. G. JENKINS

London, June 9

To the instances of "westing" adduced by Mr. W. F. Barrett as occurring in the large towns of the Old World it is desirable to add that a similar tendency prevails in the large towns of the New, excepting, of course, the cases in which physical barriers impede or prevent it.

It should be observed, also, [that this westward current of progress in cities appears to be the special manifestation of a principle much more general—the direction of great emigrations and of the advance of civilisation, apparently in pre-historic and certainly throughout historical times, having been uniformly towards the west.]

G. J. R.

How does the Cuckoo deposit her Eggs?

A FEW days ago while examining a reed bed in the fens of Lincolnshire, near Wainfleet, I found a Reed Warbler's nest, in which was deposited a Cuckoo's egg. From the *shape* of the nest, which was very narrow and deep, and from the *position* of the nest, which was built on slender reeds, on the outer edge of the bed, it was utterly impossible that the egg could have been laid, as, in the first place, the nest was far too small for so large a bird as the cuckoo to sit in; and in the second, the weight of the bird would have inevitably swamped the nest. Does not this fact go far, at any rate, to confirm the theory held by many ornithologists to be the correct one, that the female cuckoo drops her eggs into nests by means of her bill, as it is well known she is provided by Nature with an enlargement in the throat, in which the egg could be carried in safety during her flight in search of a suitable place in which to deposit it. I give here a quotation from Bewick on the subject:—

"Naturalists are not agreed as to whether the female cuckoo lays her egg at once in the nest of another bird, or whether she lays it first on the ground, and then, seizing it with her bill, conveys it in her throat (supposed to be enlarged for this purpose) to the nest which is to be its depository."

I should be glad if any of your correspondents will inform me if the male bird has a like enlargement in the throat, or is it only to be found in the hen?

T. AUDAS

Regent's Terrace, Hull