fluid and clear, the cobalt borate ball partly dissipated, and, on cooling, the surface of the bead presenting a pink appearance, evidently caused by projected particles of soda, volatilised *per se*.

6. It would thus seem that the blowpipe is even a more delicate analytical weapon than the spectroscope, for it distinguishes between two flames exhibiting D-line spectra only, which spectrum analysis does not. W. A. ROSS

March 6

The Screw-Propeller in Nature

NOW that the question of the best form of the screw as a propeller has become of such importance it is interesting to note what Nature has done in this direction.

The seed of the ash (*Fraxinus excelsior*) is provided with a wing very delicately twisted, and, when the seed falls, the action of the air upon this screw-like wing causes it to revolve rapidly. The result is that the seed is kept suspended in the air for a comparatively long time, and is wafted by the slightest breeze to a considerable distance from the parent tree. I do not know that this peculiarity is referred to in any botanical work, but it very beautifully fulfils the object which characterises more completely the lighter-winged seeds, viz., the dispersion of the seed beyond the limits of the plant or tree which bears it.

I am not by any means sure that the screw on the ash seed will not *by its own action*, independently of any wind, work itself away, in its fall, from the perpendicular line. But, when the wind blows strongly—and it takes a strong wind to blow the seeds off at all—their range is very extensive.

The seeds hang stubbornly to the tree through the winter months, reserving themselves for the March gales, of which the wind-fertilising plants avail themselves so largely.

I should much like to know if any of your readers have observed this screw and studied its pitch, and it would be very remarkable should it prove that the pitch of this natural screw is the one which will give the most power to the propeller of a steamer.

The seeds of the maple and the sycamore have somewhat similar appendages, but the screw is, in neither case, so marked. If anyone, at this season, will throw up a stick at the seed clusters of ash, maple, or sycamore, he will find the seeds come fluttering to the ground like a cloud of butterflies and alighting quite as softly on the ground.

Feb. 15 ALFRED GEORGE RENSHAW

The Migration of Species

IN NATURE, vol. xii. p. 86, I read a communication signed "W. L. Distant," in which the writer states that sea-going ships were frequently visited by both birds and insects.

In confirmation of this fact, I can mention from my own observation two instances of birds visiting ships in which I was making the homeward voyage from the West Indies, and one instance on a voyage to New Zealand, in which the visitor was a butterfly.

In the first case, the ship being off the Spanish coast, but not in sight of land, a very handsome bird came on board. It was a species of dove, blue being the principal colour, with darker markings. Some of the seamen called it a Spanish dove. It was caged and taken home by one of the passengers.

In the second case, being in the neighbourhood of Bermuda, a large flight of a species of swallow settled on the vessel. These poor birds were in a very exhausted condition, and numbers of them were captured by a large cat belonging to the ship. The survivors continued their passage at daybreak next morning.

In the year 186—, on a voyage to New Zealand, we were one morning visited by a butterfly, there being at the time a light breeze blowing. My sons made great efforts to capture this interesting stranger, but unfortunately without success, as it fluttered overboard, and was soon lost to sight in the hollows of the waves. They, however, got sufficiently near to ascertain it to be a true butterfly. The colour consisted of various shades of rich orange brown, and the margins of the wings were deeply indented.

I made careful inquiries of the officers of the ship as to the proximity of land, and was informed that the nearest was the rock of St. Paul's, then fully two hundred miles distant.

M. DASENT

Patea, Taranaki, New Zealand, Nov. 18, 1875

The Three Kingdoms of Nature

SOME children were playing at a game called "The Kingdoms," which consists in the mention of various substances, and asking if they belong to the animal, vegetable, or mineral kingdoms. One little girl mentioned "water," and the company were puzzled as to which kingdom it should be assigned. Is there a sub-aërial or gaseous kingdom? Will you kindly enlighten the members of our NURSERY?

March 4

OUR ASTRONOMICAL COLUMN

THE VARIABLE STAR, β PERSEI (ALGOL).—Herr Julius Schmidt, Director of the Observatory at Athens, publishes in the *Astronomische Nachrichten* the results of observations on the times of minima of this variable star, extending from August 1846 to November 1875. The epochs are given in Paris mean time with correction for the light-equation. The probable error of a single determination of the time of minimum from 183 observations by Schmidt is ± 8·0 minutes; fifty observations of Argelander gave a probable error of ± 6·0 minutes, and fifty-five observations of Schönfeld, one of ± 4·6 minutes, showing by a mean of the 288 observations a probable error of ± 7·0 minutes. The period assumed by Schmidt in the discussion of his Algol observations between 1840–1875 is 2d. 20h. 48m. 53·6s.

Some interesting details respecting this star are found in Schönfeld's "Der lichtwandel des Sterns Algol im Perseus" (Mannheim, 1870). His comparison stars and their relative assumed brightnesses were :—

Star.	Brightness.
ν Persei	0·9 in grades.
α Trianguli	3·5 ,,
δ Persei	7·8 ,,
β Trianguli	9·1 ,,
γ Persei	10·9 ,,
ϵ Persei	12·8 ,,
β Arietis	16·7 ,,
ι Aurigæ	17·3 ,,
γ Andromedæ	23·4 ,,

The following, extracted from the more extensive table given by Schönfeld in his treatise, will indicate the law of variation as derived from the light curve :—

Distance from Minimum. h. m.	Brightness. Before.	Brightness. After.
4 30	20·7	20·8
4 0	20·2	20·2
3 30	19·6	19·2
3 0	18·7	17·7
2 30	17·4	15·8
2 0	15·3	13·2
1 30	12·1	9·8
1 0	8·5	7·6
0 30	6·3	6·2
0 0	5·6	5·6

The most probable period over which the variation extends is 9¼ hours, and the minimum lies very nearly in the middle of the same. The most perceptible diminution of brightness occurs 1h. 26m. before the minimum, when the star is somewhat fainter than the mean of γ and ϵ Persei, and the most perceptible augmentation when the star arrives at nearly the same degree of brightness, but 1h. 47m. after minimum. In this phase it is hardly fainter than the mean of δ Persei and α Trianguli. Schönfeld states that to his eye the variation of Algol is included between the magnitudes 2·2 and 3·7; he considers γ Andromedæ an average star of the second magnitude, δ Persei 3·5, α Trianguli about 3·1, and ν Persei 4·1.

For elements of Algol we may adopt at present the following, derived from Schönfeld's last catalogue. First minimum of 1876 . . January 2·23233 Greenwich mean time; period 2·867288.