westward), and somewhat flatten the curved paths with the wind; but it would not probably affect materially the general explanation above.

"H. D. G." truly observes that, owing to the curvature of the earth, his station was nearly 2000 feet below the horizontal line of Spithead, but this also would not materially alter our explanation.

So far for the sound heard at distant stations not very far from the east-west line from Spithead. When, however, we come to consider the case of Oxford and other places nearly due north, where the sound was heard, and in particular the duration of continuous sound (20 seconds) and succession of sounds and silences noted by Sir W. J. Herschel, our explanation entirely fails. It is true that the differences of distance from Oxford to the different ships were so small that the impulses from all the forty-six ships must have arrived within the interval of about half a second, but they would have diminished in intensity (according to the law of the inverse square of the distance, which in the absence of wind in their direction must be assumed) so as to be less strong than the impulse from a single gun at the distance of ten miles, a distance at which, we have seen, it would have been inaudible.

Was there a southerly current in the upper atmosphere between the Solent and Oxford? Or was the state of the atmosphere abnormal as to temperature, so that the upper regions were warmer than the lower, as hardly seems probable? Or, lastly, were the sounds heard by Sir W. J. Herschel diffraction effects outside the upward curving sound rays, as the intervals of sound and silence seem to suggest? Or is any other explanation possible from known laws?

Possibly some light may be thrown on these questions by other correspondents, or such experts as Sir G. Stokes, Lord Rayleigh or Prof. Osborne Reynolds.

The Cherbourg Peninsula at its northern end is about the same distance to the south of Spithead as Oxford to the north. It would be interesting to know if the sounds were heard by ships in the channel between the Isle of Wight and Cherbourg.

ROBT. B. HAYWARD.

Ashcombe, Shanklin, March 12.

The New Star in Perseus.

IN sending you a provisional light-curve of Dr. Anderson's new star for publication in NATURE, my principal purpose has been to ascertain the nature of the curious fluctuations in the latter part of its course. I have no doubt that they are real, as even the slight irregularity in the descending curve, about March 5, has been independently detected in Leyden, and probably elsewhere also; but the periodicity that seems to establish itself in the past six or seven days may be only apparent. In this country the weather has been generally unfavourable for some weeks, and it is possible that astronomers in other parts of the world will be able to fill the gaps between the observed parts of the descending curve (on February 25, March 1, 3, 5, 6, 13, 17, 20, 21, 22, 23, 25, 27).

This star is remarkable in still another respect. It is a well-known fact that new stars have almost exclusively made their appearance in the Milky Way; moreover, it has been pointed out recently by Sir Norman Lockyer in this journal that the Novæ are not equally distributed along the galactic zone; like the "Wolf-Rayet" stars, they seem to avoid the region comprised between Cassiopeia and Carina. Nova Persei 1901 is no exception to the general rule, it being situated on a feeble distance of the central plane of the Milky Way, but as in the case with the other new star discovered by Dr. Anderson, in Auriga, it lies in a relatively poor region of the galactic zone, in which phenomena of this kind have but rarely occurred. Notwithstanding this, I think that the tendency among the new stars to group themselves in the opposite region of the Milky Way holds good as a rule.

C. EASTON.

Rotterdam, March 27.

NOVA PERSEI.

THE observations of the new star in Perseus have not decreased in interest since they were last referred to in NATURE. Strictly according to precedent a nebular spectrum, somewhat similar to that observed by Gothard in Nova Aurigæ, followed the disappearance of the dark lines in the spectrum; but about the same time a new phenomenon in relation to Nova was observed; the star behaved like a "collision-variable."

Sudden changes of magnitude have been one of the most interesting features of this new star. Since the time (February 23) that the Nova attained its greatest brilliancy, the star gradually diminished in brightness, decreasing rather rapidly till the 13th March, and somewhat more slowly up to the 17th. Since this date periodical variations have occurred, the star decreasing to a 5·5 magnitude star and rising to about 4·2 in a period of three days (about). Thus minima were observed on March 19, 22, 25 and 28. On the evenings of the 30th, 31st and April 1 the star was of mag. 4·2, 4·3, 4·4, so that either another minimum had occurred between the times at which these observations were made or the periodicity is undergoing a change. It is important, therefore, that the light of the Nova should be observed as often as possible, so that such changes may be accurately determined.

Whether this result is due to the complete capture of the denser swarm or to other changes brought about in the sparser one, it is as yet impossible to say.

We append some extracts from a paper communicated to the Royal Society by Sir Norman Lockyer last Thursday.

Colour.—The colour has undergone some distinct changes since the observation on March 5 last, when it was shining with a claret-red hue. On the 9th and 10th it was observed to be much redder, due probably to the great development of the red C line of hydrogen.

On the 23rd and 24th the star was noted as yellowish-red, while on the 25th (after the sudden drop in magnitude) it was very red with perhaps a yellow tinge.

Since that date the star has again become much less red than formerly, and on April 1 was distinctly yellow with a reddish tinge.

The Visual Spectrum.—Since March 5 the spectrum has become much fainter, the bright lines of hydrogen being relatively more prominent than they were before; indeed, C and F throughout this period have been the most conspicuous lines, especially the former, while the bright lines λλ 5169, 5018 and 4924, and the line in the yellow at or near D, were the most prominent of the others.

All these lines have been gradually becoming weaker, but there is an indication that λ 5018 has been brightening relatively to λ 5169.

Accompanying the great diminution in the light of the Nova observed on the evening of the 25th, the spectrum was found to have undergone a great change: the continuous spectrum had practically disappeared, and a line near D (probably helium D^3) became more distinct. The other lines were hardly visible.

The Photographic Spectrum.—The spectral changes recorded in the photograph in one part of the spectrum follow suit with those observed visually in the other.

On March 6 the photograph was very similar to those obtained in the earlier stages, the only apparent difference being in the relative intensity of the bright hydrogen lines as opposed to those having other origins, most of which have been shown to be probably due to iron and calcium. The hydrogen lines have sensibly brightened, while the others have become much feebler.

The photograph of March 10 shows a further dimming of the bright lines other than those of hydrogen.

On March 25, when the next good photograph was taken, the spectrum had undergone great modifications. The hydrogen lines are still very bright, though they do not show the structure which they did in the photographs taken between February 25 and March 10. The bright lines other than those of hydrogen which are seen in the earlier photographs have now disappeared and other lines become visible. The continuous spectrum has also greatly diminished.

Rough determinations of the wave-length of these new lines have been made by Mr. Buxandall by interpolation between the hydrogen lines. They are as follows:—

387. Brood and merging into Hζ (3889).
436. Faint.
447. Not very strong. Probably Helium (λ4471·6).