

excellent, the greens, blues and violets were distinctly exalted at the expense of the oranges and the reds, the effect being slightly garish.

Later I computed an exactly similar combination with the exception that  $561\mu$  now took the place of  $546\mu$ , and the correction of all errors due to curvature was made for that line. This second object-glass was then constructed, and it was found that the defect referred to had been entirely removed.

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Polurrian, Mullion,  
S. Cornwall,  
October 13.

#### The "Ship-designs" on Prehistoric Egyptian Vases.

As my friend Dr. Forbes has raised once more a question about the Egyptian ships, without quoting the decisive examples, I would ask to supplement his letter in NATURE of October 4, p. 499.

On the Gebel Arak ivory knife-handle is figured the result of a naval fight between two types of ships ranked opposite to each other, with the drowned men lying between them (*Ancient Egypt*, 1917, p. 27). The Egyptian ships are of the same form as those on the Hierakonpolis wall painting (*Hierakonpolis*, lxxv.), with the two cabins and gangway between, and a top shelter alike in both. The Hierakonpolis painting also shows a black ship with very high prow, like those of the enemy on the ivory, and like one with a square sail on a vase in the British Museum. Each of the Egyptian ships has the painter rope and branch at the prow, like that used to catch the wind on the Swedish and Guinea coasting vessels. At the stern is the steersman holding the large steering paddle. It does not seem possible to deny that these are ships.

Now these vessels are exactly of the type of the ships of the pottery paintings. The same outline, cabins, space between them, and ensign at the hinder cabin, tying-up rope, and branch in the prow. If these are ships, then the sticks projecting below them are oars. The only argument for fixed forts is that the flamingoes indicate lagoons, but then most primitive waterways are bordered with lagoons. So I cannot see how any idea of fixed habitations can accord with all these evidences of shipping, glad as I may be of any explanation by an eminent zoologist about the living forms.

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#### Microseisms and Storm Forecasts.

THE value of the seismograph as a detector of the more severe type of cyclonic storm in the Bay of Bengal was recognised some fifteen years ago by Mr. C. W. Peake, then Meteorologist at Calcutta. When I left the Observatory in 1922 it had become regular routine for the Omori charts to be examined for microseisms during the writing of the Daily Weather Report, whenever pronounced symptoms of a serious storm existed in the south of the Bay. Well-marked microseisms invariably confirmed other evidence in the case of the early stages of dangerous cyclones, and were sometimes noticed when the storm centre was so much as 1000 miles south of Calcutta.

I do not, however, recall any instance in which microseisms were associated with ordinary rough weather or with an advance of the monsoon, but possibly a close scrutiny of the charts on the appropriate dates would reveal the phenomenon. The general view in the observatory was that the seismograph ignored anything but a moving area of excep-

tionally low pressure, and for this reason there is some doubt as to whether the obvious explanation that such microseisms are due to ordinary surface waves is the correct one; the large surface wave presumably always caused by the progression of the cyclone as a whole may, however, play a part in the production of the earth tremors. In any case, Dr. Banerji's suggestion (NATURE, October 18, p. 576) that the vibrations he observed may be used in forecasting the date of arrival of the monsoon on the Malabar coast, is very interesting and should prove valuable.

E. P. HARRISON.

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#### Flight of Birds.

SOME observations which I made on the flight of gulls two years ago on a trip to the Gambia were confirmed lately by observations in the Irish Sea and Atlantic. With the vessel (some 300 tons reg.) proceeding N.N.E. in a steady fresh E.N.E. wind, the gulls flew head to wind, keeping practically the same position in or over the stern of the vessel, apparently on motionless wings and with little or no updraft of air. While keeping head to wind they advanced *sideways* with the vessel going about 9 knots. I noticed the same attitude of gulls when the wind was quite ahead and the birds as usual, flying head to wind. In the latter case the birds seemed to have less difficulty in maintaining both their position and motionless attitude.

In practically identical weather, but with rather less wind force, I was surprised, on another day, to see gulls flap their wings continuously, a difference of behaviour which seems curious.

When up the Gambia River, on a calm day, I noticed a large heron flying along a few feet above the river surface. It gave a few flaps of its wings, then planed along some distance, then a fresh flap and again a plane, and so on for some distance but maintaining the same level. Recently, I constantly observed gannets fly in the same way.

DAVID WILSON-BARKER.

#### The Fluorescence and Channelled Absorption Spectra of Bismuth Vapour at High Temperatures.

CONTINUING our previous work on the absorption of light by bismuth vapour, we have found that the vapour exhibits, at a temperature of about  $1300^{\circ}\text{C}$ ., an absorption spectrum composed of a very great number of bands presenting a fine structure, and extending from  $\lambda 6500$  to  $\lambda 4500$ . We have photographed more than 400 bands in this region. These bands shade off towards the red end. At this high temperature, it is found that the vapour emits a fluorescent radiation orange-yellow in colour, and we have succeeded in photographing the fluorescence spectrum of the vapour at this temperature, containing about 24 bands ranging from  $\lambda 6600$  to  $\lambda 5050$ . Hitherto bismuth has not been shown to possess either the fluorescence or channelled absorption spectrum in this region. Full details of the experiments, together with the photographs of the fluorescence and channelled absorption spectra of the vapour at this high temperature, will be published shortly.

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