

fact of pathology, which by itself would be enough to settle the question—the rare cases, namely, of metamorphopsia. It sometimes happens that a piece of the retina is detached by means of a wound, and that it afterwards grows on again in a wrong position, and vision is regained, but things are out of place. A case has just been reported before the Italian Ophthalmological Society, in which distorted vision occurred over the portion of the retina affected, the inversion being from right to left, but not also up and down (showing, therefore, in addition, that the retina can still perform its function when it is wrong side out). Such cases as this are also plainly incompatible with a projection theory. C. L. F.

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#### MARSH GAS UNDER ICE.

PROF. REMSEN'S note under the above title in *SCIENCE* for January 24th, p. 133, is of more than local interest. So far as I am aware, the phenomenon of gas spurts through ice has not before been described. As early as the winter of 1878-'79 the writer observed, at West Summit, N. J., the ice on a bog covered with miniature craters and mounds of new ice. These ice accumulations took place about vents up through which came water and gas bubbles, the former charged with the brick-red ferruginous deposit at the bottom of the bog. Frequently the vent was along the side of a blade of bog grass. During the winter, the surface of the ice on the bog become very rough by the additions made in this way. The flocculated bog ore thus brought to the surface was, during times of rain and thaw, washed into the neighboring stream, so that the process tends to retard the growth of bog ore deposit. Similar outbursts may be observed during the winter where a coating of ice forms over a lawn which has been treated with ordinary manure in the autumn. Gas spurts break out after a period of continued cold, and the surface of the ice becomes discolored with the products urged up by the escaping gas. An instance of this action was to be seen on the grounds of the Museum of Comparative Zoölogy at Cambridge last winter. It would be of some importance in glaciology to ascertain what part this escape of gas plays

in the breaking-up of the ice on shallow ponds and lakes.

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CAMBRIDGE, MASS., January 27, 1896.

#### ETHNO-BOTANIC GARDENS.

THE purposes of a museum are twofold: First, it is to be a place of instruction where the general public can resort for information as to objects from distant or foreign lands; second, it is to be a place for scientific research. A museum fulfills its purpose best when both of these objects are kept in view. The collections should be so arranged as to teach the public by object lessons, and at the same time be adapted for scientific work. Most of our colleges have kept these objects prominent in the fore front, and many of them have arranged synoptical collections for the instruction and edification of visitors. Several of the larger institutions of learning, notably Harvard and the University of Pennsylvania, have buildings set aside for museum purposes, and it is, therefore, to them that we must turn when we desire to study the operation of museums with educational views and aims.

The University of Pennsylvania proposes to erect, in the near future, a series of museum buildings, which will bring the institution into closer touch with the general public, and at the same time give the students in the several departments a chance for original research work. It is intended by the University authorities to place the buildings in a public park to afford better light for exhibition purposes, and so as to display to better advantage the architecture of the structures. A separate building it is planned will be devoted to archæology and ethnology. Such a building is badly needed at present, for the anthropological collections in general have accumulated to such an extent as to crowd the space in the library now allotted to them.

The opportunity is presented when these buildings are erected to construct an ethno-botanic garden in connection with the public park. It is to the outlining of the purposes of such ethno-botanic gardens, in general, that this article is directed.

1. Only aboriginal American plants should find a place in such a garden. No plant can be found more graceful than maize, a grass asso-