

same way as I imagine the dust of the flame to be deposited on the plates, namely, by difference of temperature, our rooms being warm and windows cold at night. The only difference is in the rate of deposit, due to there being less dust in the room air and to the smaller difference in temperature in the case of the window. Cleaning a small part of a window which had been clean ten days previously, a piece of ice was rubbed over the outer surface until dew began to deposit on the inside. The deposit on the ten-day-old surface was different from the newly cleaned one, but not greatly so. While the newly cleaned part was covered with the usual little lens-like discs, the older surface was covered with much larger and irregularly shaped blotches of film. As the nights had not been cold since the window was cleaned, we can hardly expect much dust to have collected in ten days; so another window was tried which had not been cleaned for some months. Repeating the cleaning and cooling on this window, it was found that while the newly cleaned part carried a ground-glass-like deposit, the uncleaned part was sufficiently clear for the landscape to be seen through it. These tests show that dust on glass does tend to cause water condensed on its surface to spread and take the film form in the same way as glass that has been exposed to flame or to hot gases.

Coming, now, to Quincke's experiment, referred to by Lord Rayleigh, in which sulphuric acid is shown to produce the same effect as the blow-pipe flame, this and the experiment with hydrofluoric acid seem to have inclined Lord Rayleigh to think that cleanliness was the cause of the breath figures. But does either sulphuric acid or hydrofluoric acid prove cleanliness? I have doubts. I know I am on dangerous ground in differing from Lord Rayleigh on anything connected with surface action, yet I have recently had my lesson on how some substances cling to glass in spite of efforts to get rid of them, and I think it is not improbable that some residual of both sulphuric and hydrofluoric acid may cling to the glass in spite of washing. Recently I was making an investigation in which was required a little iodine vapour, and for this purpose put a small crystal of iodine in a flask from which the vapour was drawn as required. Afterwards the investigation took another turn, and the flask was used for other purposes, but many days' work were lost owing to that flask. Results were obtained with it which were contrary to previous experience. As suspicion centred on the flask it was discarded, and not until a new flask had replaced it could satisfactory work be done. Yet all this loss of time was occasioned by a residual quantity of iodine, which the washings with alcohol, acids, soap water and a sponge, had not succeeded in removing. After that experience I confess to being sceptical of absolute cleanliness of glass after being touched with sulphuric or hydrofluoric acid. Any residual of these substances, as they have an affinity for water, would tend to form films and not little lens-like patches. Though breath figures may be formed by dust, yet there are evidently other ways of altering the surface of the glass and causing it to repel or attract water, and so making the surface capable of giving breath figures.

JOHN AITKEN.

Ardenlea, Falkirk, June 5.

The "Vernal Phytoplankton Maximum."

IN NATURE for April 27 it was stated, in connection with the plankton statistics taken periodically in the Irish Sea from the Port Erin Biological Station, that (p. 289) "the outstanding fact in this season's work, so far, is that the diatoms are unusually scarce and late. The vernal phytoplankton maximum has not yet arrived."

That statement referred to the collections up to the middle of April. During the rest of April the catches remained small—for the most part 1, 2, or 3 cubic centimetres in a standard haul of the fine silk net. In May the approximate quantities (they have not yet been accurately measured), in the same net, run as follows:—

	c.c.		c.c.
May 1	2	May 22	35
" 4	1	" 25	10
" 10	10	" 29	15
" 13	40	June 1	15
" 16	60	" 3	60
" 19	50	" 5	50

NO. 2172, VOL. 86]

The large catches on May 13-22 were mainly composed of *Chaetoceras* (*C. debile*, and a few other species of diatoms), while the sudden increase in the beginning of June is due almost wholly to *Rhizosolenia* (mainly *R. semispina*).

Last year we found that the vernal phytoplankton appeared as two well-marked maxima, one in April, caused by species of *Chaetoceras* and *Lauderia*, and a second in June, composed of *Rhizosolenia* and *Guinardia*.

It is evident that the "vernal maximum" is really a complex made up of the maxima of several different species or groups of species which seem to occur in a definite sequence, but may be earlier or later, more spread out in one year or more telescoped together to form a single diatom maximum in another. Moreover, the individual species or groups of species may be more abundant one year than another.

In the present year, if we look at the three genera that usually bulk largest in our spring and early summer collections, we find that *Biddulphia* reached its climax in March (but continued throughout most of April in fair abundance), *Chaetoceras* not until the latter part of May, and *Rhizosolenia* in early June. *Rhizosolenia* is usually as late as or later than this; *Biddulphia* is always one of the first forms to appear, sometimes causing a slight increase in the plankton as early as February, so it is really *Chaetoceras* (some of the species of which are usually the most abundant of our April diatoms) that is this year unusually late.

I have just returned from Port Erin, where, during the first few days of this month, *Rhizosolenia* seemed to be unusually abundant. The water of the bay is visibly discoloured by it; when a tow-net at the end of a fifteen minutes' haul is raised from the sea it contains a column of thick soupy fluid, which runs out very slowly, as the meshes of the silk are largely clogged up with the diatoms; on a calm surface, with the sun shining, the peculiar iridescent glistening appearance characteristic of *Rhizosolenia* can be seen from the boat, and anything put into the water is at once covered by a slimy layer of the slender needles. It may be that *Rhizosolenia* has not even yet attained its climax, but a week ago the June increase in diatoms had certainly set in with unusual force. The "vernal maximum" has, then, this year been spread out and divided into three parts—a slighter increase in March (*Biddulphia*), a much greater one, later than usual, in May (*Chaetoceras*), and another great increase (*Rhizosolenia*) early in June.

W. A. HERDMAN.

Liverpool, June 10.

On the Action of the Latex of *Euphorbia peplus* on a Photographic Plate.

IN August, 1909, our attention was directed to certain properties of surgical importance possessed by the milky juice of *Euphorbia peplus*, a spurge naturalised in this colony. During the examination of the milky juice or latex, we exposed during two days in the dark a highly sensitive photographic plate some millimetres above a sheet of glass on which we had dried a few drops of the juice. On development, a sharp image of the dried juice appeared on the plate. We propose to describe briefly a few results from the many experiments since made to determine the conditions and nature of the action on the photographic plate.

Thirty drops of the juice were spread on a sheet of glass as the letters EUPHORBIA, and the glass dried in an oven at 100° C. for two hours. A sharply defined image of the letters was produced on development of a photographic plate (speed 325) placed 5 mm. above the dried juice after an exposure of forty-eight hours or longer. The density of the images increased with greater length of exposure, with thicker films of dried juice, and with less distance between the plate and the film. The edges of the images were well defined, as if focussed on the photographic plate. No image appeared with short exposures of twenty-four to forty-eight hours unless the films were very thick. With long exposures, up to thirty days, the images were more dense, but showed a little diffusion at the edges of the letters. When a distance of 15 mm. separated the photographic plate from the film, the plate was unaffected. Action on the plate diminished