

## Photographic Irradiation

IN NATURE, vol. x. p. 245, Mr. W. C. Crofts adds his experience to those previously given in your journal, and gives his conclusion as opposed to that of Mr. Aitken (vol. x. p. 185). Like most conclusions based on incomplete evidence, it does not conclude anything. The fact is as I have stated it in my previous note (vol. x. p. 205) on the subject, and when I return to England I will be most happy to demonstrate it to anyone who cares to examine the question thoroughly. Mr. Crofts' experience with the Liverpool dry plates agrees with my own, for these plates are prepared with a pyroxyline which gives a minimum of irradiation when "backed," and give the best quality of image for scientific purposes attainable with a bromide film; but certain qualities of pyroxyline prepared in precisely the same way will show irradiation that nothing can cure, even when used for making transparencies by contact, where, of course, there can be no question of influence of any optical defects. The unquestionable fact that a collodion-albumen film acts in so totally different a manner from one of bromized collodion should prove that the lens has next to nothing to do with it.

My conclusions may be very imperfect, but so far as they go they are definite, and are drawn, not from two or three, but from hundreds of experiments with all kinds of dry plates and many different samples of pyroxyline, and whatever they may be worth, they fully support Mr. Aitken's views.

New York, Aug. 19

W. J. STILLMAN.

## Pflüger on the "Salivary Glands" of the Cockroach

I WAS much interested in reading Prof. Redfern's able address at the British Association this year, more especially with that portion which dealt with the observations of Prof. Pflüger on the histology of the so-called "salivary glands" of the cockroach. In the year 1871 I wrote a short paper in Professors Humphry and Turner's Journal (vol. v. p. 242 *et seq.*) upon these organs. In this I ventured to doubt the truth of the generally accepted hypothesis as to their functions. My reasons for so doing may be summarised as follows:—1. The appendages in question are perforated throughout by ramifying spirally coated tubules differing only from tracheæ in this respect; during their passage through the organs in question they receive a layer externally of yellowish tissue, which may be, as Prof. Pflüger suggests, epithelial glandular tissue. 2. These tubules with the sacculi opening into them can be more or less fully injected with a liquid by simply immersing the insect in a suitable menstruum, and placing it under the exhausting receiver of an air-pump. This experiment demonstrates indubitably that this tubular system contains an *elastic fluid*, which for anatomical and other reasons I conclude to be air. 3. As far as my experience carried me, the sacculi, the supposed reservoirs of the saliva, never contained naturally any liquid whatever, but upon opening the thorax were invariably found to be collapsed and apparently empty. This is precisely what would occur supposing that during life they were filled by and communicated readily with the external air.

I have not yet had an opportunity of referring to Prof. Pflüger's paper, and I am consequently obliged to accept his statements at second hand. In noticing the intimate connection there is between these organs and the nervous system of the insect, he confirms what I have myself observed. It is some years since I last anatomised a cockroach, and meanwhile I suppose these insects have utilised their organs in the way mentioned by Prof. Pflüger, and we can now see "transparent drops . . . transuding from the ends of cells when the saliva has been made to flow by irritation of the gland." On looking over my microscopic specimens I find that I still have by me one showing the so-called "salivary duct" and a sacculus injected in the way I have mentioned. Any one may satisfy himself that this result is feasible by trying the experiment. In doing so the only caution required is to exhaust the air gradually and to keep the immersed insect in a partial vacuum for a few hours. Failure under these circumstances is almost impossible.

London, Sept. 2

W. AINSLIE HOLLIS

## THE CONFERENCE FOR MARITIME METEOROLOGY

THE Conference, held at the Meteorological Office, 116, Victoria Street, for the purpose of reconsidering the decisions regarding maritime meteorology made

at the Brussels Conference in 1853, has concluded its sittings, and the Report of its proceedings will be presented to the Permanent Committee, appointed by the Meteorological Congress of Vienna (of 1873), which holds its meeting at Utrecht in the course of the present week. The Conference consisted of twenty-five members, belonging respectively to every maritime country of consequence in Europe, except Sweden and Turkey. India and China were also represented. Prof. Buys Ballot was elected president, and Capt. Hoffmeyer and Mr. Scott, F.R.S., secretaries. It met on the 31st ult., and at once subdivided itself into two sub-committees, dealing with the various questions connected with (1) "Observations," and (2) "Discussions." Each sub-committee held four sittings, and at the closing meeting of the Conference the several resolutions framed by the sub-committees were adopted, in most cases unanimously. Inasmuch as the Conference was an outcome of the Vienna Congress, these resolutions will not be published until they have been communicated to the Permanent Committee as above mentioned. Their general scope is towards the attainment of greater uniformity in the methods of meteorological observation at sea, and of subsequent publication of the results. On Thursday, by kind permission of the Astronomer-Royal, the members went to Greenwich in the morning, where they were conducted over the magnetical and meteorological department by Mr. J. Glaisher, F.R.S. In the afternoon they spent some hours at Kew Observatory, where they were received by Mr. Jeffery, the superintendent, and in the evening the whole party was entertained at dinner at the Star and Garter, by some of the members of the Meteorological Committee. On Friday several members availed themselves of the great courtesy of the War Office, and repaired to Woolwich, where they were conducted over the Arsenal by Colonel Field and other officers connected with that department. Finally, on Saturday, they inspected the Meteorological Office, where the meetings of the Conference had been held, and paid special attention to the arrangements there existing for reproducing the records of the photographic and other instruments at the several observatories in the United Kingdom.

## ON SEWAGE AND SEWAGE FARMING

No. 1.—Northampton.

AFTER having had practical experience of the fertilising effects of sewage and liquid manure, I have for several years devoted part of my leisure time to an examination of the arrangements adopted by the principal cities and towns for disposing of sewage. At first I looked at it from the agricultural stand-point; but as I proceeded with the inquiry I had to widen the range of view.

The place I visited last is Northampton. I propose at present to write a concise note of what the authorities of that town have done.

Northampton has a Board of Commissioners for dealing with sewage and kindred nuisances, which is distinct from the corporation. I believe their number is limited to twelve; of whom six belong to one political body, and six to the other. These twelve Commissioners, as a body, must, therefore, be non-political; six of one being equal to half-a-dozen of another.

The town contains at present about 50,000 people. Many experiments were made at the expense of this body for purifying the sewage. At last they adopted the scheme which I proceed to describe.

Near the town there is a number of tanks in which the sewage is allowed to settle for some time so as to enable the more bulky of its solid contents to fall to the bottom and be collected. Deprived of these solid matters, the sewage is conveyed in a main culvert, about four miles from the town, where it is received on a tract of ground