

## PITCHER PLANTS

DIFFERENCE of opinion has been expressed as to the nature and use of the liquid found in the so-called pitchers of various plants, such as *Nepenthes*, *Rafflesia*, and certain *Orchidaceæ*. The popular idea that these curious receptacles collect pure water for the refreshment of the thirsty in arid places, would seem to be set at rest, by a consideration of the fact that these plants grow in moist and marshy places. There would seem, moreover, to be some improbability that plants should secrete pure water.

In this country, where these plants are grown under exceptional conditions, there is some difficulty in settling these questions experimentally. In such cases, extraneous water often finds its way into the pitchers, so that several ounces may frequently be gathered from a single receptacle of *Nepenthes*, the greater part of which is accidental.

In August last I had an opportunity of collecting the liquid from two flowers of *Coryanthes*, one of the *Orchidaceæ*, which had just opened, in one of the well-known stove-houses of Mr. Wilson Saunders.

Though the quantity collected was small, amounting only to about three cubic centimetres, or 1·18 cubic inches, an examination showed the following properties:—

Clear and somewhat glutinous in consistence. Possessed of a high refractive power, and a specific gravity of 1·062.

Odour pleasant but faint, becoming more marked by a gentle heat. Neutral to test papers. Becoming milky, by concentration on the water-bath, it finally yielded a transparent gum, insoluble in alcohol.

Oxalates produced no precipitate of lime, but basic lead acetate gave a curdy reaction. Concentrated hot sulphuric acid blackened the liquid.

Although the taste was not acrid, the mawkish flavour would render it quite unpalatable.

This examination therefore proved the liquid to be something else than pure water.

100 parts of liquid contained:—

Water and volatile oils . . .	98·51
Non-volatile residue . . .	1·49

100·00

G. B. BUCKTON

## SPECTROSCOPIC OBSERVATIONS OF THE SUN

PROF. C. A. YOUNG has obligingly sent me an account of his recent work, which is very rich in promise, as he tells me that he has now the dispersive power of 13 prisms of heavy flint, each with an angle of 55°. It is now some time ago since I announced to the Royal Society that over soots prominences, built up of different vapours, were sometimes observable by means of their lines, *bright and thin*, overlying the thick absorption lines in the spot spectra. This observation is, I hold, a clear proof of the truth of the theory put forward by Dr. Frankland and myself, namely, that changes in spectra, notably the thickening of the lines, are due to pressure, and not to temperature; for according to the theory of exchanges, the bright prominence must be hotter than the absorbing vapour which underlies it, and still the lines are thinner.

Dr. Young has now observed these phenomena with exactly the same result. He writes to Professor Morton:—

“I write to inform you that last Thursday, Sept. 22, about 11 A.M. Hanover mean time, I was so fortunate as to see the sodium lines  $D_1$  and  $D_2$ , reversed in the spectrum of the umbra of a large spot near the eastern limb of the sun. At the same time the C and F lines were also reversed, but with the great dispersive power of my new

spectroscope I see this so often in the solar spots, that it has ceased to be remarkable.

“The figure gives the appearance of the sodium lines. In the umbra of the spot the  $D_3$  line was not visible, but in the penumbra was plainly seen, as a dark shade, represented in the figure.

“I am not aware that this reversal of the sodium lines in a spot spectrum has ever been observed before; its reversal in the spectra of prominences is not very unusual. A small prominence on the western limb of the sun, which was visible the same forenoon, presented all the following bright lines, viz.: C,  $D_1$ ,  $D_2$ ,  $D_3$ , 1474;  $b_1$ ,  $b_2$ ,  $b_4$ , 1989·5, 2001·5, 2031·1, F, 2581·5, 2796·6, and  $h$ ; 15 in all.

“In the spot spectrum the magnesium lines  $b_1$ ,  $b_2$ , and  $b_4$  were not reversed, but while the shade which accompanies the lines was perceptibly widened, the central black line itself was thinned and lightened.”

Further, Prof. Young has succeeded in obtaining photographs of protuberances on the sun's limb, of which he has been good enough to forward me a specimen. They were obtained by attaching a small camera to the eye-piece of the telescope and opening the slit somewhat widely, using the hydrogen line near C. He adds:—“As a picture, the little thing amounts to nothing, because the unsteadiness of the air and the maladjustment of the polar axis of the equatorial caused the image to shift its place slightly during the long exposure of three-and-a-half minutes which was required, thus destroying all the details. Still, the double-headed form of the prominence is evident, and the possibility of taking such photographs is established.”

In a letter to myself Prof. Young adds:—“I should not have published so imperfect a success were it not that my engagement as a member of Prof. Winlock's eclipse party prevents me from following up the matter at present. The experiments were tried on the 28th, and on the 30th the equatorial was taken down to be packed up and sent to the rendezvous, at Alvan Clark's factory, where all the instruments are collected and put in order previous to sailing.”

J. NORMAN LOCKYER

## NOTES

SINCE our last issue the Joint Committee of the Royal and Royal Astronomical Societies and the Council of the British Association have met to consider the question of the Eclipse Expedition, and in consequence of these meetings Mr. Gladstone has been asked to receive a joint deputation to urge upon the Government the importance of the proposed expedition. The Joint Committee have appointed the Presidents of the Royal and Royal Astronomical Societies, the Astronomer Royal, and Mr. Lockyer to plead its cause; while the Council of the British Association will be represented by the President and officers of the Association, Sir John Lubbock, M.P., and Dr. Lyon Playfair, M.P. Up to the time of our going to press, however, no time had been fixed for the deputation to wait upon the Prime Minister.

THE medals in the gift of the Royal Society have this year been awarded as follows:—The Copley medal to Dr. Joule; the Rumford medal to M. Descloiseaux; and the Royal medals to Prof. W. H. Miller and Mr. W. Davidson.

PROF. SIMON NEWCOMB has arrived in this country from the United States Naval Observatory. His mission among us is to examine and report on the great Newall telescope. He will then proceed to Gibraltar to observe the approaching eclipse.

ALL members of the British Association will be concerned to learn that Dr. Hirst feels called upon by the pressure of his new duties to resign the General Secretaryship of the Association, an honorary post which he has long filled with the greatest advantage to Science.