

author uses the term "Gummidruck" (printing by means of india-rubber), he is careful enough to point out that other means besides india-rubber are now employed. The process, which is here very clearly described, is accompanied by many wrinkles which will be useful to those who have never previously employed it.

Perhaps few amateurs would attempt this method of printing, considering the numerous other more simple means in use, but professionals will find that a great latitude can be obtained in development, so that the appearance of the picture can be made to suit various tastes.

A short and interesting historical notice is given showing how the process has gradually been evolved, and this is followed by an account of the advantages of the method, the materials employed, and the whole manipulation.

Chapter vii. describes briefly the three-colour and combination pigment printing, while Chapter viii. contains a summary of the process. Two plates, which accompany the text, illustrate the difference between the simple- and combination-gummidruck.

*Text-Book of Physical Chemistry.* By Clarence L. Speyers. Pp. vii + 224. (New York: D. van Nostrand Company. London: E. and F. N. Spon, Ltd., 1898.)

BEGINNING with a chapter on energetics, in which Ostwald is followed, the author treats in order the properties of gases, thermodynamics, physical change including the properties of solutions, chemical equilibrium and chemical change, Gibbs' phase rule, the effect of temperature on chemical change, and electrochemistry. A satisfactory feature is the free use of the calculus. The book is intended for students; under these circumstances the omission of all reference to original papers is, we think, a serious mistake. The method adopted is to give the theory of a phenomenon in mathematical form, following this up by a number of exercises illustrating the equation obtained. The exercises appear to be taken, as a rule, from the original memoirs dealing with the subject under consideration, and are doubtless useful; but in many cases the deduction of the equation is too much abbreviated to be easily followed, and the experimental basis of the theory is nowhere sufficiently fully considered. This tendency to put theory before experiment is especially objectionable in teaching.

The treatment from the standpoint of energetics, adopted in the opening chapters, is not strikingly successful. The following statement occurs, for example, on p. 18: "When we attempt to get work from the volume energy of a gas, we find that the work we get comes from heat energy, or some other energy, and that *so long as the gas remains a perfect gas and its mass does not change so long the volume energy of the gas remains constant, whether T changes or not.*" The volume energy of a perfect gas is, however, given by the product of its volume and pressure, and is therefore proportional to the absolute temperature.

The author's view (p. 20), that "The kinetic theory is a troublesome thing and is becoming an object of ridicule," will hardly meet with universal acceptance.

Notwithstanding the faults above mentioned, it is only fair to add that the book is up to date, and that the range of subjects considered is wider than usual.

*Recueil de Données Numériques Optique.* By H. Dufet. Premier Fascicule. Pp. ix + 415. (Paris: Gauthier-Villars et Fils, 1898.)

BOTH chemists and physicists will be much indebted to the French Physical Society for the valuable and useful volumes which they are now publishing. The one before us, which is devoted to wave-lengths, and indices of gases and liquids, contains a mass of data, which have been

collected from far and near, and brought together in a compact and serviceable form.

Great value must be attached to the volume, as references are given in every case; and even though the work is not quite complete, it is a most desirable addition to every chemical and physical library.

The preparation of the data here collected must have entailed a great amount of work, and M. Dufet deserves the thanks of scientific men for completing the present volume.

#### LETTERS TO THE EDITOR

*[The Editor does not hold himself responsible for opinions expressed by his correspondents. Neither can he undertake to return, or to correspond with the writers of rejected manuscripts intended for this or any other part of NATURE. No notice is taken of anonymous communications.]*

#### Solar Halos.

THERE is a coloured halo at a considerable angular distance from the sun that is a very usual phenomenon in (*e.g.*) the Engadine in winter. Its angular diameter appears to be the same as that of the distant white halo sometimes seen round the moon.

On July 2 we were ascending the Furgen Pass from the Breuil side, and such a coloured halo was visible. The snow slope and ridge in the front of us cut off the lower part of this halo; but it was completed both in colour and form by reflection off the snow. Thus the coloured circle was complete; but the upper part (more than half, of course) appeared "in the air," the lower part "on the snow."

The surface of the snow was unusually sparkling in appearance.

It may be of interest to record that, when I have been at a considerable height (over 6000 feet above the sea at the least), and there have been very fine cirrus clouds close to the sun, I have seen exceedingly pure colours *not* arranged in rings. Thus I have seen, in a cloud, a very delicate rose-crimson entirely surrounded by a very pure green. With more continuous mist or cloud between me and the sun, I have seen a succession of coloured rings round the sun; and I have seen these vanish and give place to the single coloured halo of large diameter referred to earlier.

In the Engadine in winter I once saw a very complicated arrangement of circles and parhelia; but it would be impossible to describe these without a figure. I have such a figure, and could lend it to any one specially interested in the subject.

5 Keppel Place, Devonport.

W. LARDEN.

#### A Living Toad in a Snake.

I SHOULD be obliged by your inserting the following experience if you think it remarkable.

Yesterday we killed an adder (?) here, about 38 inches long; and seeing that he had made a meal evidently some little time before, out of curiosity we opened him, and extracted a large toad, which was about half-way down the snake's interior, or about 18 inches.

The toad, whose head was much wider than the snake's, and whose body was many times as large as his enemy's head, we of course all thought must be dead; and we laid him on a flower-bed, wondering how he could have got inside the snake at all, for it certainly seemed a case of the greater being contained in the less. Of course we knew the marvellous stretching powers of a snake's jaws, but this seemed to eclipse them all.

As we watched the toad he seemed to move, so we bethought ourselves of trying to revive him, and, after pouring water freely over him, and whisky and water down his throat, we were intensely astonished to see him revive; so much so that he stood up on all-fours, blown out like a balloon, and made a kind of a dart at a stick in the most comical way.

Eventually "Jonah," as we promptly christened him, disappeared amongst the flowers. Can any of your readers quote a like case of resuscitation? Perhaps some of them might be able to afford information as to the probable duration of the toad's entombment.

F. W. MAJOR.

Woodlands, Bettws-y-coed, N. Wales, August 2.