SCIENTIFIC SERIALS

In the *Journal of Botany* for January, there is no paper of special general interest, the illustration being that of a new British moss *Tortula inclinata*. Mr. J. G. Baker describes a number of new or little known capsular gamophyllous Liliaceæ; and Mr. F. E. Kitchener gives an "elementary proof of the rule for detecting spiral arrangement." The first article in the February No. is an illustration of how much yet remains to be done in completing the British flora, being a description with a plate of a British Dock, *Rumex maximus*, discovered by the Hon. J. L. Warren in the neighbourhood of Lewes, where it was recorded many years since, but not having been observed in the meantime, had been generally treated as an error. There is no other paper bearing specially on British Botany, but a very useful account of the Esparto-grass of commerce, by Mr. J. R. Jackson.

Astronomische Nachrichten, No. 1972. The elements of Henry's comet, 1873, by E. Weiss and Aug. Zielinsky, the following elements are given :—

	Weiss. Berlin Time.	Zielinsky. Paris Time.
T =	Oct. 1·80022	Oct. 1·765792
Π =	50° 8′ 18″·5	50° 18′ 42″·96
Ω =	176° 43′ 14″	176° 43′ 21″·88
i =	121° 28′ 58″·8	121° 27′ 48″·19
log *q* =	9·585297	9·5866441

A list of fifteen new nebulæ is given, which M. Stephan observed at Marseilles.

Poggendorff's Annalen der Physik und Chemie, No. 10, 1873.—We may first notice, in this number, some observations relating to phenomena of light.—M. Behrens contributes a paper on the production of coloured light through elective reflection. The reflected and transmitted light of opal and other bodies was examined with a micro-spectroscope; and it is shown that certain substances may have colour without absorbing light, and that the two spectra (from reflection and transmission, respectively) are exactly complementary of each other. This, he says, occurs more frequently than one might suppose.—Dr. Nöggerrath draws attention to the production of light in grinding of hard stones, as witnessed in the agate-works at Oberstein and Idar. In the case of all hard stones (which the workmen press with their hands against large grindstones revolving thrice in a second), a strong red light appears between the object and the grindstone, with a red halo and emission of sparks. Transparent stones, however, are lit up throughout with a beautiful yellowish-red light, like that of glowing iron, so that it seems as if the workman must burn his hands (though the rise of temperature was not above 10° or 12° R.). The author invites research in this direction, for which the works named present good opportunity.—The concluding portion of M. von Bezold's paper on the law of colour mixture and the physiological primary colours, is given; the author is led to some valuable deductions which we cannot here stop to particularise.—M. Valerius, in a note on binocular, as compared with monocular, vision, comes to the conclusion that the proportion of brightness of an object, looked at successively with both eyes, and with one, is nearly independent of the absolute amount of illumination: and with ordinary candle or gas flame, does not exceed 1·15. He afterwards found that his left eye was less sensitive than the right; had he used the latter, the proportion in question would be somewhat less. The measurements were made with Foucault's photometer.—M. Kundt contributes a paper on the vibration of rectangular, and especially of square, *air plates;* meaning, by an air plate, a thin layer of air enclosed between two solid plane plates applied to each other (it may be either in communication with the external air, or closed all round). He makes the vibration-forms visible by means of cork powder; and the present communication chiefly shows that the vibration-numbers observed in the entirely-closed air plates agree with those deduced from theory, to less than 1 per cent.—Dr. Hübener gives an account of researches on transpiration of salt solutions through capillary tubes. The velocity of outflow is found to be inversely as the equivalent weights; which may be explained (the author thinks) by the fact, that in compounds with high equivalent weight the molecules are larger than in those with low. If, then, equal weights of two salts of different equivalent weight be dissolved in a liquid, there will be present in the solution of the heavier salt larger but fewer molecules than in the other solution. Hence, in the solution of the first salt, the molecular surface in contact with the solvent will be less than in the second liquid; and the internal friction will be less; thus (other conditions equal), there will be greater mobility.—A paper by Dr. Dibbits discusses, at some length, the dissociation of ammonium salts in aqueous solution; the results detailed being both qualitative and quantitative.—M. Rammelsberg communicates a second note on natural compounds of tantalum and niobium; and Dr. Bender describes an ingenious method of determining the time of vibration of a material pendulum. The remaining matter does not specially call for notice.

SOCIETIES AND ACADEMIES

Royal Society, Feb. 5,—"On the Anatomy and Habits of the genus *Phronima* (Lattr.)." By Dr. John Denis Macdonald, F.R.S., Staff Surgeon R.N., Assistant Professor of Naval Hygiene, Netley Medical School.

Of all groups of Crustacea the Amphipoda would appear to exhibit the widest range, in the modification of their parts or organs, without obliterating the delicate lines of natural affinity running through them as a whole. This is well exemplified in the interesting paper of Dr. R. Willemoes-Suhm, naturalist to the *Challenger* Exploring Expedition, "On a new Genus of Amphipod Crustaceans" founded by him, and named *Thaumops*. This genus, although exhibiting many characters in common with *Phronima*, presents some striking points of difference traceable in the external jaw-feet, caudal appendages, the position of the generative bone, and certain particulars in its external anatomy.

During the exploratory voyage of H.M.S. *Herald*, in the S.W. Pacific, numerous species which I have always been in the habit of referring to the genus *Phronima*, were taken in the towing-net; and I might remark that the assumed parasitic habit of these creatures was never, at least, a prominent fact to me, they were so often taken either perfectly free, or tenanting a nidamental case. Those who, like Dr. Suhm, are acquainted with deep-sea dredging, are usually cautious how they refer the doubtful products to their proper habitat; whether it be the bottom that has been reached, or some zone of the watery space above. Indeed it is quite possible for the narrow area of the tallow-arming of the deep-sea lead to include fortuitously, and carry down *Phronima* or any other little crustacean naturally living near the surface; and contact with the bottom would finally press it into the tallow, so as to mislead the observer as to its true habitat. Conversely, in bringing up the dredge from a given depth, it may finally carry with it any more superficial objects casually lying in the track which it takes.

The author then describes a species of *Phronima* captured in lat. 30° 16′ S., long. 176° 27′ W.

The evidence of Dr. Willemoes-Suhm supports my own experience that there is no metamorphosis in this group; and as it is very probable that the history of the development of *Thaumops* would resemble that of *Phronima*, the following observations may be of some importance, as carrying the process a little further than it has perhaps yet been traced by him :—

In lat. 21° 0′ S. and long. 17° 45′ W. off the island of Ono, Fiji group, apparently the same species of *Phronima* as that above referred to was taken in the towing-net, but with the addition of a numerous progeny of young in a large gelatinous but tough nidamental case. This interesting nest was shaped like a barrel, but with both ends open, and the external surface was somewhat tuberculated and uneven. The wall of the tube presented numerous round and puckered openings, observing no very definite arrangement, but through which entering currents were observed to pass. These openings in general pierced the tuberculations, though not invariably.

An external membrane, with an internal lining, was distinctly visible, both seeming to be continuous at the rims of the tube. The space between these layers was filled up with a pulpy substance, in which scattered nucleiform bodies were detected with a higher power of the microscope.

In a subsequent commission on the North-American and West-Indian Station in H.M.S. *Icarus*, I have frequently captured "*Phronima* in its bay," as my messmates would say. In order to bring the swimmerets into full play, the animal protrudes its body tail foremost from the case, only calling into use the fine tips of the third and fourth pairs of thoracic limbs to hold fast its charge. When it fully retires into the case, the claws of the two posterior pairs of legs are pressed backwards against the lining membrane, so as still more effectually to secure its hold on the approach of danger.