

occurred within the memory of living men, and Dr. Bell counted 52 jets of steam issuing from the ground in one valley. A considerable number of the known species of cactus are found about the Mexican boundary line; of one of these, the *Cereus giganteus*, which is sometimes called the Monumental cactus, we give an illustration: the mistletoe grows in the same region. We also give an engraving of the "Mushroom Rock," one of the many similar monuments, denuded and abraded by water, which are to be found in the arid plains of Kansas. Dr. Bell's book contains thoughtful matter on the Indian races of the past and present sufficient for a monograph on the subject. He writes briefly and sensibly on the Mormons, denying the common assertion that Salt Lake City, setting aside polygamy, is a moral place, and stating that there is an entire absence of religious devotion. The Joe Smith anti-polygamy party are making rapid strides, especially in the numerous outlying settlements in Utah and Nevada.

### OUR BOOK SHELF

*Lehrbuch der Chemie, gegründet auf die Werthigkeit der Elemente.* Von A. Geuther, Prof. in Jena. Erste Abtheilung. (Jena: Döbereiner, 1869.)

The doctrine of Quantivalence plays a most important part in the general theory of modern chemistry; but when carried out to the extreme lengths which Dr. Geuther claims for it, this doctrine, so useful in the classification of elements, fails altogether to bear an original meaning. The following is an extract from a table, on page 16 of the above-named work, showing the Quantivalence of the elements according to Geuther:—

	H = 1						
As	V.	III.	I.	Na	V.	IV.	III.
Ba	II.	I.	Os	VIII.	VI.	IV.	III.
Br	VII.	V.	III.	I.	S	VI.	IV.
Cs	V.	IV.	III.	II.	I.	N	V.
Cl	VII.	V.	III.	I.	Ag	IV.	II.
Cr	VI.	IV.	III.	II.	K	V.	IV.
Fe	VI.	IV.	III.	II.	Mn	VII.	VI.
Fl	(VII.)	(V.)	III.	I.	I	VII.	V.

Here, for example, we find potassium described as acting as a monad, a dyad, a triad, a tetrad, and a pentad element, and chlorine as a monad, dyad, triad, pentad, and heptad element. What does this do more than express, in a roundabout and inconvenient way, what Dalton long ago enunciated as combination in multiple proportions—that great law round which the whole structure of the science is built up?

The doctrine of Quantivalence is, in strictness, only applicable in the case of gaseous elements and compounds; bodies whose molecular weight can be estimated by their vapours obeying Avogadro's law of volumes, viz. that the molecule of an element or compound is that weight of the body which occupies in the gaseous state the volume of hydrogen gas weighing 2: the Quantivalence of an element being determined by the number of atoms of hydrogen or of chlorine, or other distinctly monad element or radical, which it may be able to take up in this molecular volume. By an extension of this reasoning, we term potassium a monad and barium a dyad metal, because we find that they each form only one compound with chlorine, potassium combining with one atom and barium with two; and we assume that KCl and BaCl<sub>2</sub> represent the respective molecular weights of the compound. Many metals, doubtless, may be considered to exhibit a variation in Quantivalence: such as iron in the ferrous and ferric chlorides; mercury in Hg<sub>2</sub>Cl<sub>2</sub> and HgCl<sub>2</sub>: though this difference may be also explained in the case of mercury by the two atoms of metal being joined together. But to term chlorine a heptad because it forms the com-

pound HClO<sub>4</sub>, or potassium a pentad because we know of the body K<sub>2</sub>S<sub>5</sub>, appears to be an exaggeration of a useful doctrine almost as unphilosophical as the divisible atoms of M. Delavaud. Apart from these views, Prof. Geuther's book will be welcomed by all chemists as containing clear and concise descriptions of many compounds not mentioned in other manuals, which are of much importance for the theory of modern chemistry. H. E. ROSCOE

*Parasitology.*—*Zeitschrift für Parasitenkunde.* Herausgegeben von Dr. E. Hallier und Dr. F. A. Zürn. Band I. Zweites Heft. 8vo. pp. 126, with 2 Plates, price 3s. (Jena, 1869. London: Williams and Norgate.)

THERE can be no more conclusive evidence of the vigour with which scientific researches are pursued in Germany than the fact that a circulation is found for a periodical publication devoted entirely to the study of parasites, animal and vegetable. We find in the present number reports of observations on the *Aspergillus glaucus*, and two other newly-discovered parasitic Fungi, found in the passages of the ear, and connected with certain forms of deafness, and a description of a cure in the case of the former species by the external application of alcohol. The greater part of the number is devoted to a dissertation by Dr. Hallier on the parasites of infectious diseases. A portion of this paper is occupied by a discussion whether the minute *Myxogastres* found on decayed wood, grass, &c., belong to the animal or vegetable kingdom. Since the only high authority who has maintained the animal nature of these parasites, Dr. de Bary, in opposition to Fries, Berkeley, and others, has since apparently altered his views, the question may now be considered as disposed of. If the apparent spontaneous motion of the young germinating spores of *Trichia* and other Fungi be considered proof of an animal nature, the same argument must be applied to the zoospores of certain Algae. A. W. B.

### Serials

*Hardwicke's Science Gossip*, for December, contains, among others, articles on the employment of wild flowers for decorative purposes (in gardens), on the invasion of lady-birds, on the structure of the hairs of plants, on variations in the *Primulaceae*, on the influence of food and light on *Lepidoptera*, and on the natural history of the Ruff and Reeve.

The *Monthly Microscopical Journal* for December (No. 12) contains some remarks on the nineteen-band test-plate of Nobert, and on immersion lenses, by Mr. J. J. Woodward, United States Army; a paper on high-power definition, with illustrative examples, illustrated with a plate of test-objects, by Dr. G. W. Royston-Pigott; and one entitled "My Experience in the Use of various Microscopes," by Dr. H. Hagen. These relate to the instrument and its use. The papers devoted to subjects for investigation are—one by Mr. Staniland Wake, on the Development of Organisms in Organic Infusions, and further remarks on the Plumules or Battledore Scales of some of the *Lepidoptera*, by Mr. John Watson, the latter illustrated with a plate. The Microscopical Society's Proceedings contain some interesting remarks on the Scales of the *Thysanura*, in connection with Dr. Pigott's paper.

The recent numbers of the *Revue des Cours Scientifiques*, a periodical which is hardly so well known in this country as it deserves to be, and which is intended to furnish a general weekly statement of the proceedings of the principal scientific societies both in France and in other countries, contain translations of Dr. Christison's historical account of the operations of the Royal Society of Edinburgh from 1783 to 1811; of Sir Roderick Murchison's anniversary address to the Geographical Society in May last; and of the first of Dr. Bence Jones's lectures on Matter and Force, delivered before the Royal College of Physicians. Of foreign scientific doings, we find a translation of Carl Vogt's paper on the Primitive History of Man, read before the meeting of German naturalists at Innsbrück, and M. Vulpian's lecture on Pathological Anatomy, delivered at the Faculty of Medicine in Paris.