

L.); the white lily (*Lilium candidum* L.); and the Spruce fir (*Picea excelsa* Link). He has also introduced a chapter of 32 pages on the 'physiology of nutrition.' The language of the book is exceedingly simple. Some of the original figures are very good. In general it may be stated that the subject-matter is well treated. The author intends at some future time to present in a similar way the cryptogamic types.

The fact that the author begins the study of structural botany with the highest types will be objected to by most modern botanists. Many will also question the advisability of attempting to present structural botany in an elementary way.

ALBERT SCHNEIDER.

NOTES AND NEWS.

ARGON.

M. BERTHELOT has communicated to the Academy of Sciences the fuller details which he promised concerning his experiments upon argon. Towards the end of February he received from Professor Ramsay 37 cubic centimètres of the gas, with which small quantity he has obtained positive results of the greatest interest. Following the process by which he formerly effected the direct combination of nitrogen with various organic compounds, he finds that argon is equally absorbed by these bodies, though apparently with somewhat less facility. The action of the silent discharge upon a mixture of argon and benzene vapor is accompanied by a feeble violet luminosity visible in the dark. In one of five experiments he found that a fluorescent substance was produced, which developed a magnificent greenish light and a peculiar spectrum. M. Berthelot took 100 volumes of Professor Ramsay's gas, added a drop or two of the hydrocarbon, and exposed the mixture to the silent discharge at moderate tension for about ten hours. The ex-

cess of benzene vapor being removed in the usual way, the mixture was found to have been reduced to 89 volumes. More benzene was then added, and the experiment was repeated with higher tension, which in three hours produced a reduction of volume equal to 25 per cent. On again submitting the gaseous residue with benzene to very high tension discharge he found the final result to be 32 volumes. Analysis showed this residue to contain only 17 volumes of argon, the other 15 volumes being hydrogen, free or combined, and benzene vapor. In other words, M. Berthelot has effected the combination of 83 per cent. of the argon under experiment, and was prevented only by the dimensions of his apparatus from carrying the condensation yet further.

The quantity at his disposal was too small to permit of complete examination of its products, but he is able to say that they resemble those produced when nitrogen mixed with benzene is submitted to the silent discharge. That is to say, they consist of a yellow resinous matter condensed on the surface of the glass tubes employed. This matter on being heated decomposes, forming volatile products and a carbonaceous residue. The volatile products restore the color of reddened litmus paper, proving the production of alkali by the decomposition, though the quantity of matter at command was too small to allow of its nature being demonstrated. In any case, M. Berthelot concludes, the conditions in which argon is condensed by hydrocarbons tend to assimilate it yet more closely with nitrogen.

He adds that if it were permitted to assume 42 instead of 40 as the molecular weight of argon—an assumption which the limits of error in the experiments hitherto made do not, in his opinion, exclude—this weight would represent one and a half times that of nitrogen; in other words, argon

would stand to nitrogen in the same relation as ozone to oxygen. There is, however, the fundamental difference that argon and nitrogen are not transformable into one another, any more than the isomeric or polymeric metals. Without insisting upon points which are still conjectural, M. Berthelot observes that in any case he has demonstrated that the inactivity of argon disappears in the conditions he describes. When the gas can be obtained in considerable quantities, he says it will be easy by ordinary chemical methods to take these primary combinations, or their analogues obtainable with oxygen, hydrogen, or water, as a point of departure for the preparation of the normal series of more simple compounds.—*London Times*.

At the anniversary meeting of the Chemical Society, Professor Ramsay stated that he had examined the gas (which according to an observation of Hillebrand's was nitrogen) given off by the mineral cleveite when treated with sulphuric acid, and discovered that it contained argon. Spectroscopic examination showed a very bright yellow line nearly coincident with the yellow sodium line. This line was found to be identical in position with the yellow line observed in the spectrum of the sun's chromosphere, and attributed to the hypothetical element helium. Whether helium could be separated from argon remained to be seen. Mr. Crookes gave some additional particulars of the spectrum of the gas from cleveite. He found certain coincidences with the band spectrum of nitrogen, particularly in the ultra violet region, but some lines were present which were not found in the nitrogen spectrum, and *vice versa*.

DR. B. BRAUNER, Professor of Chemistry in the Bohemian University, Prague, has written to *Nature*, suggesting that argon possibly exists in nebulae. He points out that a strong argon line, measured by Mr. Crookes, has practically the same wave-

length as the chief nebula line, and thinks that the line at λ 3729.8 in the 'blue' spectrum of the new substance represents the line at λ 3730, found in the spectra of nebulae and white stars.

PALEONTOLOGY.

PROFESSOR H. J. SEELEY has recently published a paper in the *Philosophical Transactions* upon *The Reputed Mammals from the Karroo Formation of Cape Colony*, in which he reconsiders the evidence as to the mammalian nature of Theriodontes and of Tritylodon. He established the former genus some years ago upon a fore-arm; the latter was established by Richard Owen in 1884, upon a skull. In his previous papers the author has described both of these types as mammalian, and the skull has invariably been placed with the mesozoic Monotremes, owing to the resemblances which its teeth present, both in the crown and in the multiple fangs, to other mammals of this very ancient and widespread group of multituberculates. Professor Seeley, in his renewed examination of the skull of Tritylodon, believes that he finds evidences of 'post-frontal' and 'pre-frontal,' and possibly of a 'transverse' bone, as in the Theriodont reptiles. This evidence he considers overweighs the distinctively mammalian characters of the teeth. If it is subsequently confirmed by more satisfactory material this will be another example of the independent development of what we have always considered distinctively mammalian characters within the reptilian class. Another remarkable species of an undoubted reptile is the *Diademodon tetragonus*, in which the single-fanged or reptilian molar teeth are capped with crowns which bear a most striking resemblance to a low-crowned quadritubercular mammalian molar. These discoveries in the Karroo Formation promise to yield most interesting and surprising results, although if the position here taken

is correct, it is somewhat disappointing to have such a type as *Tritylodon* taken from the class mammalia. The evidence does not seem to be conclusive.

SIR WILLIAM DAWSON.

At the last regular monthly meeting of the Montreal Natural History Society (26th ult.), Sir J. William Dawson read a paper on the skeleton of a 'white whale' (*Beluga*), recently found in a brickyard off the Papi-neau Road, Montreal. The specimen, which was imbedded in the Leda clay, belongs to a species once abundant, and still not at all uncommon, in the lower St. Lawrence. Though it is now rarely known to ascend the river to fresh water, a stuffed specimen in the museum of the N. H. Society is said to have been caught near Montreal. The fossil was below the normal length, being about 12 feet.

Since his retirement from the principalship of McGill University, Sir William Dawson has turned his larger leisure to good account. Besides three important works issued from the press during the last two years, he has found time for special courses of lectures and an unfailing succession of papers on a wide range of subjects. Just forty years ago he entered on his task of building up McGill College. The status of the university when his supervision ceased, in 1893, is one of the things on which Canadian science may well congratulate itself.

J. T. C.

GENERAL.

THE Niles bill incorporating the New York Zoölogical Society, and providing for the establishment of a zoölogical garden, has been passed by the Senate at Albany.

D. APPLETON & Co. announce a *Criminology Series* edited by Mr. Douglas Morrison, the first volume of which, *The Female Offender*, by Professor C. Lombroso, will be issued this month.

THE *Academische Revue* is a new journal

edited by Dr. Paul Von Salvisberg and published by the International Hochschulwesen in Munich. In addition to original articles on educational interests it proposes to publish academic news, and the editor will be glad to have items of news sent to him.

THE building used as a school of manual training by the New York Institution for the Instruction of the Deaf and Dumb, at One Hundred and Sixty-fifth Street and Fort Washington Avenue, was burned on April 8th, causing a loss of \$40,000. The building stood about 400 feet from the main buildings of the institution.

At a meeting on March 28th, the Court of St. Andrew's University decided to found two medical chairs, the one of materia medica and the other of anatomy.

MACMILLAN & Co. have in press a translation, by Dr Charles R. Eastman, of Prof. Karl von Zittel's 'Elements of Paleontology.'

DR. THOMAS M. DROWN, now Professor of Chemistry in the Massachusetts Institute of Technology, has been elected President of Lehigh University.

LUIGI FERRI, Professor of Philosophy in the University of Rome, died recently at the age of 68.

DR. G. GLOGAU, Professor of Philosophy in the University of Kiel, died recently in Greece at the age of 50.

PROFESSORS ERMANN, E. Schmidt and Stumpf, of the University of Berlin, have been elected members of the Prussian Academy of Sciences.

THE British Government spent in 1894 £4,802 on the destruction of locusts in Cyprus. The methods used were the collection of eggs during the summer and winter and the purchase of live locusts by weight in spring.

THE following lectures will be given before the Royal Institution, of London, after Easter: Professor George Forbes, three lectures on 'Alternating and Interrupted

Electric Currents'; Professor E. Ray Lankester, four lectures on 'Thirty Years' Progress in Biological Science'; Professor Dewar, four lectures on 'The Liquefaction of Gases'; Dr. William Huggins, three lectures on 'The Instruments and Methods of Spectroscopic Astronomy.'

SOCIETIES AND ACADEMIES.

ACADEMY OF NATURAL SCIENCES OF PHILADELPHIA.

At the meeting on March 26th Dr. M. V. Ball called attention to the microscopic preparation of the germ characteristic of erysipelas, the botanical name of which is *Streptococcus pyogenes*. The culture of the organism had been used with most gratifying success in the treatment of cancer, the cure of some cases having been reported, while others had been manifestly benefited. A subcutaneous injection of the culture raises the temperature to 104° in 20 minutes. This palliative effect of the poison of erysipelas had long been known, the improvement of cancer cases accidentally affected having been noticed years ago in hospitals.

Dr. S. G. Dixon spoke of the morphological resemblance between *Actinomyces*, or the ray fungus, and *Aegerita candida*, a white fungus, found growing on damp decaying wood. The former is believed to produce in cattle and man the disease known as lump jaw, or *Actinomyces*. Should the two fungi prove to be identical, the hitherto unknown cause of lump jaw in cattle would not only be explained, but cattle breeders would be enabled to prevent, to a great extent, the much dreaded disease.

Mr. Henry C. Pilsbry exhibited fine specimens of the genus *Cerion*, and called special attention to the variations of the teeth or plates on the collumella, some of which extended far into the shell, while in other individuals they are quite superficial, the external characters, however, remaining

the same. He believed the use of these folds was to enable the mollusk to keep a more firm grasp of the shell, and thus move it about more freely, as it hangs from twigs and leaves.

The geographical distribution of the species is peculiar. They inhabit Cuba, Hayti, the Bahamas and Florida Keys and reappear in Curacao, off the northern coast of South America, but are completely absent from Jamaica and the Caribbean chain. There is, therefore, a wide gap between the northern and southern areas inhabited by the genus *Cerion*, although the islands in this space are apparently favorable to the existence of snails. A suite of specimens illustrating species of *Cerion* was exhibited.

EDW. J. NOLAN, *Recording Secretary*.

NEW YORK ACADEMY OF SCIENCES.

At the meeting of the Section of Astronomy and Physics of the New York Academy of Sciences on April 1st Professor R. S. Woodward was elected chairman and William Hallock secretary for the following year.

President Rees gave a very interesting resumé of the work done in astronomy during 1894. This paper may appear in SCIENCE a little later.

President Rees then showed some of Professor Barnard's wonderful photographs of the Milky-Way, pointing out the evidences of the peculiar geometrical clustering of the stars in certain parts, as well as the 'dark lanes' and 'star streams' discovered by Barnard. He also showed photographs of several comets, especially Brooks', which went through such interesting changes. The photographs brought out most beautifully the unusual structure of the tail, and the sudden changes in shape, especially when it seemed to have encountered a resisting medium and apparently broke the tail near its middle.

The pictures were discussed and admired