

the papers as a whole are above the average of those emanating from similar societies. The lists of specimens in the various sections appended show that the members continue to do much practical work; a botanical garden has also been opened in connection with the Society.

*Proceedings of the Bath Natural History and Antiquarian Field Club*, vol. iii. No. 2, 1875.—This part contains the following papers on scientific subjects:—Notes on some railway sections near Bath, by the Rev. H. H. Winwood, F.G.S., with an illustration.—Studies and problems for Somersetshire geologists, by M. H. B. Woodward, F.G.S.—There is an interesting address by the Rev. Preb. Scarth, on the results of modern archæological achievement, and a summary of Proceedings for the year 1874-75, by the Secretary.

*Morphologisches Jahrbuch*.—The first part of this new Journal of Anatomy and Embryology, issued by Prof. Gegenbaur (see vol. xii. p. 15) consists of about 200 pages, and has five double plates. Prof. Gegenbaur supplies an excellent introductory article on the position and signification of morphology. The succeeding sixty pages are occupied by an elaborate account, by Dr. Richard Hertwig, of *Podophrya gemmipara*, a new species of Acinetan, followed by an essay on the structure and systematic position of the Acinetæ. The author identifies his species with one figured, but not determined, by the late Mr. Alder in the "Annals of Natural History" for 1851, p. 426. Its nucleus is remarkable for having a number of irregular stellate branches, and its tentacles are differentiated into captorial and suctorial. After a review of the structure of Acinetæ generally, Dr. Hertwig comes to the conclusion that a unicellular organism, covered with cilia, is the original form from which Acinetæ and Infusorians have sprung, but that it cannot yet be determined whether it possessed a cytostome, and thus was a true ciliated Infusorian, or whether it was provided with tentacles, and was intermediate between Ciliata and Acinetæ.—The whole of the remainder (114 pages) of this part is occupied by a very notable paper by Dr. Emil Rosenberg, on the development of the vertebral column and of the os centrale carpi of man. He sets before himself the problem, little touched hitherto, of the discovery of the steps by which man may have developed from the nearest mammalian stock. Taking first the vertebral column, he sets forth the differences existing therein in the various Anthropomorphæ, and seeks to reconcile them with that of man. For instance, in two genera, Troglodytes and Hylobates, there are thirteen dorsal vertebrae, while in the Orang and in man there are only twelve. But Dr. Rosenberg has discovered in more than one human embryo an actual rib-rudiment on the 13th dorsal vertebra; so that the homology of the 13th dorsal in man and Troglodytes is established. Another result that Dr. Rosenberg claims to have demonstrated from examination of human embryos is that a process of transformation goes on in the growth of the sacrum, by which vertebrae at the proximal end, with their costal elements, are assumed into the sacrum, while a corresponding number at the distal end undergo reduction and are dismissed into the caudal region. And this process, generalised, may be applied to each of the hinder regions of the vertebral columns. Thus in the history of development each lumbar vertebra in man is the result of a single transformation from the condition of a dorsal vertebra; each sacral vertebra has previously passed through the lumbar stage; while the caudal vertebrae have been successively dorsal, lumbar, and sacral, before becoming caudal. This is necessarily but a very imperfect sketch of the major subject of this paper, which is of very high interest.

SOCIETIES AND ACADEMIES

PARIS

Academy of Sciences, Oct. 26.—M. Frémy in the chair.—In opening, he referred in feeling terms to the death of Sir Chas. Wheatstone.—M. Milne-Edwards presented the second part of the eleventh vol. of his work on "The Comparative Physiology and Anatomy of Men and Animals." The following other communications were made:—On employment of means in experimental physiology, *à propos* of the influence of stripping the leaves off the beet, upon the production of saccharine matter, by M. Cl. Bernard. M. Frémy made some remarks also on this subject.—On the carpellary theory, according to the Iridæ (third part), by M. Trécul.—On the dates of fall of meteorites, by M. Sainte-Claire Deville. He finds an excessive fall of bodies on the 12th, 13th, and 14th May; also

something like a ten-days' period, corresponding to periodical inequalities of temperature.—On the practical value of steam-injectors, by M. Ledieu.—Progress realised, in the question of making land, by employment of the rational method, and in determination of the daily working of chronometers, by M. de Magnac. The new method (he shows) renders navigation much more exact.—Magnetic observations on the island of St. Paul, in November and December 1874, by M. Cazin.—On the mosses of St. Paul and Amsterdam Islands, by M. Bescherelle.—List of Lichens collected by M. de l'Isle, on St. Paul and Amsterdam, and description of new species, by M. Nylander.—New spectro-electric tube (modified fulgurator), by MM. Delachanal and Mermet. A small conical capillary tube is placed over the platinum electrode passing through the bottom of the larger tube; through this the liquid rises and is illuminated by the spark.—On the laws which govern reaction with direct addition (continued), by M. Markovnikoff.—The industry of nitrate of soda in South America, by M. L'Olivier.—Experimental researches on the mechanism of coagulation of blood in treatment of varices by simple isolation of veins, by M. Bergeron.—On the alterations produced in the vine by *Phylloxera vastatrix*, by M. Max. Cornu.—Conservation of food stuffs, by M. Reynoss.—M. de Carvalho presented a note on the properties of air subjected to passage of an induction current.—M. Delauney on a "solar concentrator," *à propos* of M. Mouchot's paper.—M. Pertinset on a project of exploration of Terra del Fuego.—The Minister for the Navy and Colonies communicated part of a report from the Governor of Martinique on the earthquake there from 17th to 25th September, and magnetic phenomena accompanying it. M. Sainte-Claire Deville said M. Duvignan had written him from Guadeloupe that none of the Martinique shocks had been felt there.—Observations of the planet (149) discovered by M. Perrotin at Toulouse (sent by M. Leverrier).—Experiments made on Geissler tubes with the chloride of silver pile formerly described, by MM. Warren De la Rue and Müller.—On spiral nebulae, by M. Planté. He shows how a cloud of metallic matter detached from the electrode by an electric current of high tension, in a liquid, assumes a gyratory movement when acted on by a magnet; and supposes the form of spiral nebulae may thus be due to strongly magnetic celestial bodies in their neighbourhood.—On the hydrological map of the department of Seine-et-Marne, by M. Delesse.—M. Degantière presented a note on the noise which accompanies or precedes the fall of hail.

BOOKS AND PAMPHLETS RECEIVED

COLONIAL.—Report of the Agricultural Conditions, Capabilities, and Prospects of the Neilgherry District: W. R. Robertson, M.R.A.C. (Madras).  
 AMERICAN.—The Mechanical Engineer; his Preparation and his Work. An Address by R. H. Thurston, A.M., C.E. (New York, Van Nostrand).—Monthly Report of the U.S. Department of Agriculture, Aug. and Sept.—Memoirs of the Boston Society of Natural History. Vol. ii. Part 4, No. 2.—Report of Mount St. Elias: W. H. Dall, W.S.C.S.—Bulletin of the Buffalo Society of Natural Sciences.  
 FOREIGN.—Bulletin de la Fédération des Sociétés d'Horticulture de Belgique (Liège).—Liste des Jardines, des Chaires, et des Musées Botaniques du Monde (Liège).

CONTENTS

	PAGE
AMERICAN GEOLOGICAL SURVEYS. By Prof. ARCH. GEIKIE, F.R.S.	1
ALIX ON THE LOCOMOTION OF BIRDS . . . . .	3
"THE ABODE OF SNOW" . . . . .	4
OUR BOOK SHELF:—	
Further "Researches in Mathematical Science" . . . . .	6
Amery's "Notes on Forestry" . . . . .	6
Curley's "Nebraska" . . . . .	7
Bird's "Twelve Maps for Map-Drawing" . . . . .	7
LETTERS TO THE EDITOR:—	
Observation of CIRRUS CLOUD.—ALEXANDER BUCHAN . . . . .	7
Mr. Mallet's Paper on Prismatic Basalt.—ROBT. MALLET, F.R.S.	7
Plagiarism.—Prof. W. BOYD DAWKINS, F.R.S.	7
The Internal Heat of the Earth.—JOHN WILLIS . . . . .	7
OUR ASTRONOMICAL COLUMN:—	
40 Eridani . . . . .	8
Proper Motion of $\alpha^2$ Centauri . . . . .	8
The "Astronomische Nachrichten" . . . . .	8
A NEW PALMISTRY. By JOHN C. GALTON . . . . .	8
SCIENCE IN GERMANY . . . . .	10
MÜLLER ON BEES AND FLOWERS. By J. L. . . . .	10
FAYE ON THE LAWS OF STORMS ( <i>With Illustrations</i> ) . . . . .	11
NOTES . . . . .	14
ELEVENTH REPORT OF THE COMMITTEE FOR EXPLORING KENT'S CAVERN, DEVONSHIRE . . . . .	17
SCIENTIFIC SERIALS . . . . .	19
SOCIETIES AND ACADEMIES . . . . .	20
BOOKS AND PAMPHLETS RECEIVED . . . . .	20

ERRATUM.—Vol. xii. p. 559, col. 2, line 17 from bottom; for "sixty years" read "ten years."