

- GADOW, H., 1889 On the taxonomic value of the intestinal convolutions in birds. *Proceedings of the Zoological Society of London* **1889**: 303–316.
- GILCHRIST, J. D. F. and VON BONDE, C., 1922 *Practical zoology for medical and junior students*. Edinburgh.
- HUNTINGTON, G. S., 1918 Modern problems of evolution, variation and inheritance in the anatomical part of the medical curriculum. *The anatomical record* **14**: 359–445.
- MANSELL, T., 1984 Some aspects of the history of biological education over the last two hundred years. *Studies in higher education* **9**: 97–111.
- MOORE, P. G., 2012 The supply of marine biological specimens (principally animals) for teaching and research in Great Britain from the nineteenth century until today. *Archives of natural history* **39** (2): 281–301.
- NEWMAN, C., 1957 *The evolution of medical education in the nineteenth century*. Oxford.
- SPENCER, W. B., 1887 On the presence and structure of the pineal eye in *Lacertilia*. *Quarterly journal of the Microscopical Society* **27**: 165–238.
- STILES, C. W., 1901 Zoology in the medical school curriculum. *Journal of the American Medical Association* **36**: 1538–1540.
- WIEDERSHEIM, R., 1884 *Grundriss der vergleichenden Anatomie der Wirbelthiere*. Jena.

Received 8 May 2012. Accepted 20 June 2012.

P. G. MOORE

University Marine Biological Station Millport, Isle of Cumbrae, Scotland KA28 0EG (e-mail: pmoore@millport.gla.ac.uk).
DOI: 10.3366/anh.2013.0147

250 years of *Atti dell'Accademia dei Fisiocritici in Siena*: its contribution to natural history

The Accademia delle Scienze di Siena detta de' Fisiocritici¹ was founded by the physician Pirro Maria Gabbrielli (1643–1705) in 1691 to promote scientific research. Since its foundation, it has seen alternating periods of fervent activity and stagnation, often linked to historical and political events in Siena and Tuscany (De Gregorio 1996; Ferri 2006). The academy has important historical collections of minerals, fossils and animals, an herbarium and a very rich library (Vannozzi and Manganelli 2011). Since 1761, it has published a serial (herein abbreviated to *Atti*)², which is one of the oldest scientific periodicals still active in Italy.³ Publication of the first three series was irregular: the ten volumes of the first series were issued between 1761 and 1840, the seven volumes of the second series in the 1860s and the three volumes of the third series in the 1870s. Since the fourth series, which began in 1889, publication has been regular, with one or more volumes each year (Ferri and De Gregorio 2011).⁴

Only a minority of the published papers (about 5%) concerned natural history: botany and zoology (including comparative anatomy, physiology, medical parasitology, systematics and faunistics) as well as the earth sciences (geology, mineralogy, seismology, meteorology and palaeontology) were represented. Contributions were numerous and original in the first series, still frequent in the second and the third series, and sporadic thereafter. There were two reasons for this. First, when regular publication of *Atti* began, the journal became substantially the periodical of the Faculty of Medicine. Second, in the latter half of the nineteenth century many specialized natural history periodicals were founded and attracted contributions. A revival of research in natural history occurred in the



Figure 1. A plate by Raddi (1808), the first botanical paper published in *Atti* with descriptions of new taxa, depicting the moss *Fabronia pusilla* (© Accademia dei Fisiocritici, Siena).

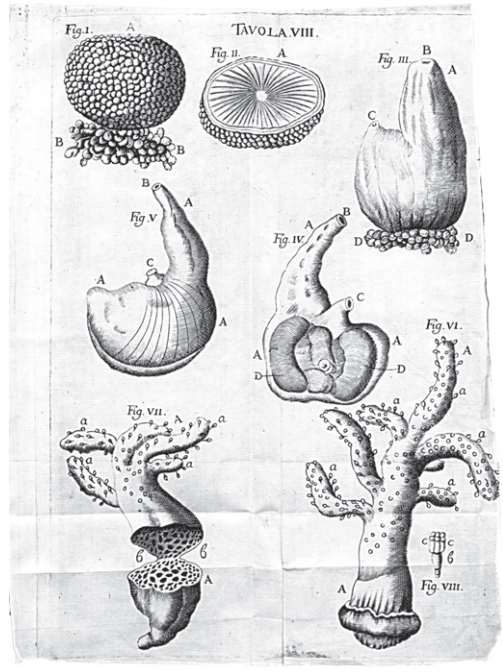


Figure 2. A plate by Bianchi (1763) illustrating sponges ("Fig. I" and "Fig. II"), ascidiaceans ("Fig. III", "Fig. IV" and "Fig. V") and soft corals ("Fig. VI" and "Fig. VII") (© Biblioteca Comunale degli Intronati, Siena).

twentieth century, when Accademia dei Fisiocritici created an agriculture section that published a separate series of proceedings, *Gli Atti della Sezione Agraria* (1933–1965).

In the first series of *Atti*, botany was monopolized by Biagio Bartalini, who investigated new ways of exploiting plants in medicine and manufacturing. Pietro Leopoldo, ninth grand duke of Tuscany, commissioned at least two botanical memoirs a year from Bartalini and many of these were printed in *Atti* (Manganelli *et al.* 2011). The only other botanical works published in the first series were a study on fertilization of double-flowered plants by Anton Maria Fineschi (1800) and a fine article on the bryophytes of Tuscany by Giuseppe Raddi (1808), in which, for the first time in the history of the periodical, new plant species were described (Figure 1). Botanical research was resumed at the end of the nineteenth century by Flaminio Tassi, and pursued by Arturo Nannizzi until the 1960s, mainly in floristics, systematics, morphology and agronomy. Nannizzi specialized in studying micromycete species of agricultural, veterinary and medical significance.

The zoological contributions in the first series of *Atti* included two letters and one note describing anatomical studies on sponges, soft corals, ascidiaceans and skates (Bianchi 1763, 1767; Batarra 1771) (Figure 2), three notes on the Mediterranean widow spider (*Latrodectus tredecimguttatus*) (Toti 1794a, 1794b; Marmocchi 1800) and a list of intestinal parasites (Rolando 1841). The majority of subsequent zoological contributions concerned comparative anatomy and physiology. Important contributions were by physicians Giulio Chiarugi, Luigi Giannelli, Angelo Ruffini, Giovanni Vitali, Fausto Sestini, Leonardo

Donatelli and Giovanni Brugi and zoologists Eugenio Ficalbi, Ercole Giacomini and Mario Benazzi. These researchers, mainly lecturers on anatomy at the University of Siena, investigated the nervous system, sensory organs, epidermis, embryology and endocrinology of cartilaginous and bony fishes, amphibians, reptiles, birds and mammals. Of particular interest are those on the paratympanic organ of the middle ear of birds and bats by Vitali (1915, 1920), the discovery of which led to his nomination for the Nobel Prize in Physiology and Medicine in 1934 (Von Bartheld and Giannessi 2011).

Earth sciences were well represented in the first series of *Atti*. Papers were published on fossils (Baldassarri 1767; Caluri 1767), Mount Vesuvius (Bartoloni 1771, 1774), stratigraphy (Arduino 1774), the “fire fountain” of Portico di Romagna (Soldani 1794) and meteorites (Soldani 1810). In the subsequent series, earth sciences contributions became sporadic: the major ones were those by Dante Pantanelli, including the first geological map of the Siena area (Pantanelli 1873), and Pietro Cusani Politi’s papers about Neogene vertebrates from southern Tuscany. Most of the other papers comprised meteorological and seismological reports from the Osservatorio Meteorologico e Geodinamico of the Institute of Physics, Siena University.

NOTES

¹ From the Greek φύσις, nature, and κριτικός, able to detect.

² The current title is *Atti dell’Accademia dei Fisiocritici in Siena*. During its long history the serial was split into 16 series and slightly changed its name many times: *Gli Atti dell’Accademia delle scienze di Siena detta de’ Fisiocritici* and *Atti della Regia Accademia dei Fisiocritici in Siena* are the major variants.

³ The oldest active scientific periodical in Italy is probably *Atti della Accademia delle Scienze dell’Istituto di Bologna* which originated as *De Bononiensi scientiarum et artium Instituto atque Academia commentarii* in 1731.

⁴ An index to the volumes published between 1761 and 1961 is available at <http://www.academiafisiocritici.it/indiciatti.pdf>.

REFERENCES

- ARDUINO, G., 1774 Saggio fisico-mineralogico, di Lythogonia, e Orognosia. *Gli Atti della Accademia delle Scienze di Siena* **5**: 228–300.
- BALDASSARRI, G., 1767 Descrizione di una mascella fossile straordinaria trovata nel territorio sanese. *Atti della Accademia delle Scienze di Siena detta de’ Fisiocritici* **3**: 243–254, tavv 5–8.
- BARTOLONI, D., 1771 Delle mofete del Vesuvio. *Atti della Accademia delle Scienze di Siena detta de’ Fisiocritici* **4**: 201–215
- BARTOLONI, D., 1774 Osservazioni sopra il Vesuvio. *Gli Atti della Accademia delle Scienze di Siena* **5**: 301–400.
- BATARRA, G. A., 1771 Observationes Zootomicae. *Atti della Accademia delle Scienze di Siena detta de’ Fisiocritici* **4**: 353–356, un-numbered plate.
- [BIANCHI, G.], 1763 De duplici Tethyi genere, et de Manu marina. *Gli Atti della Accademia delle Scienze di Siena detta de’ Fisiocritici* **2**: 217–224, plate 8.
- [BIANCHI, G.], 1767 De duplici Holoturii genere, et de Manu marina. *Atti della Accademia delle Scienze di Siena detta de’ Fisiocritici* **3**: 255–259, plate 4.
- CALURI, F., 1767 Conghietture, ed osservazioni sopra una cochiglia marina fossile non alterata, creduta di un nuovo genere, ritrovata dentro un’altra cochiglia fossile non alterata della campagna sanese. *Atti della Accademia delle Scienze di Siena detta de’ Fisiocritici* **3**: 262–277, plate 9.
- DE GREGORIO, M., 1996 L’Accademia dei Fisiocritici, pp 123–136 in BARZANTI, R., CATONI, G. and DE GREGORIO, M. (editors), *Storia di Siena*. Volume **2**. Siena.

- FERRI, S., 2006 Università e Fisiocritici: un legame per la scienza. *Annali delle Università Italiane* **10**: 91–113.
- FERRI, S. and DE GREGORIO, M. (editors), 2011 *Comunicare la scienza: i 250 anni degli "Atti" dei Fisiocritici*. Siena.
- FINESCHI, A. M., 1800 Memoria sopra la fecondazione dei fiori doppi. *Atti della Accademia delle Scienze di Siena detta de' Fisiocritici* **8**: 211–217.
- MANGANELLI, G., BENOCCI, A. and SPADINI, V., 2011 Biagio Bartalini's Catalogo dei corpi marini fossili che si trovano intorno a Siena (1776). *Archives of natural history* **38** (1): 18–35.
- MARMOCCHI, F., 1800 Memoria sopra il Ragno rosso dell'Agro Volterrano. *Atti della Accademia delle Scienze di Siena detta de' Fisiocritici* **8**: 218–223.
- PANTANELLI, D., 1873 Dei terreni terziari intorno a Siena. *Atti della Regia Accademia de' Fisiocritici di Siena*, serie 3, **1**: 259–265, plates 1–2.
- RADDI, G., 1808 Di alcune specie nuove, e rare di piante crittogame ritrovate nei contorni di Firenze. *Atti della Accademia delle Scienze di Siena detta de' Fisiocritici* **9**: 230–240, plates 1–4.
- ROLANDO, L., 1841 Osservazioni sopra i vermi intestinali, colla descrizione di qualche nuovo genere e nuova specie. *Atti della Accademia delle Scienze di Siena detta de' Fisiocritici*, **10**: 1–12.
- SOLDANI, A., 1794 Memoria sopra il terreno ardente di Portico di Romagna e di altri simili fuochi. *Atti della Accademia delle Scienze di Siena detta de' Fisiocritici* **7**: 200–223.
- SOLDANI, A., 1810 Storia di quelle Bolidi, che hanno da se scagliato pietre alla terra. *Atti della Accademia delle Scienze di Siena detta de' Fisiocritici* **9**: 1–29.
- TOTI, L., 1794a Memoria fisico-medica sopra il Falangio o Ragno Venefico dell'Agro Volterrano. *Atti della Accademia delle Scienze di Siena detta de' Fisiocritici* **7**: 244–262.
- TOTI, L., 1794b Osservazioni intorno al Ragno Venefico dell'Agro Volterrano continuate nell'Anno 1788 e 1789. *Atti della Accademia delle Scienze di Siena detta de' Fisiocritici* **7**: 263–265, plates 5–6.
- VANNOZZI, F. and MANGANELLI, G. (editors), 2011 *Siena. Guida del Museo di Storia Naturale, Accademia dei Fisiocritici*. Milan.
- VITALI, G., 1915 Sui disturbi funzionali e sulle lesioni istologiche dipendenti dalla distruzione dell'organo nervoso di senso da me descritto nell'orecchio medio degli uccelli. *Atti della Regia Accademia de' Fisiocritici in Siena*, serie 7, **7**: 291–342.
- VITALI, G., 1920 Sulla presenza nei chiroteri dell'organo nervoso da me scoperto nell'orecchio medio degli uccelli. *Atti della Regia Accademia de' Fisiocritici in Siena*, serie 8, **12**: 521–524.
- VON BARTHELD, C. S. and GIANNESSE, F., 2011 The paratympenic organ: a barometer and altimeter in the middle ear of birds? *Journal of experimental zoology, part B: molecular and developmental evolution* **316**: 402–408.

Received 14 April 2012. Accepted 20 June 2012.

GIUSEPPE MANGANELLI and ANDREA BENOCCI

Dipartimento di Scienze Ambientali, Università degli Studi di Siena, Via Mattioli 4, 53100 Siena, Italy (e-mail: manganelli@unisi.it)

DOI: 10.3366/anh.2013.0148

Dodo, *Raphus cucullatus*, in the Macleay Museum, The University of Sydney, Australia

The dodo, *Raphus cucullatus*, occurred as a wild bird on Mauritius and on at least one small offshore island (Hume 2006). It was last reported alive in 1662 (Birdlife International 2008). Despite its celebrity as the most famous extinct animal, the dodo is only known today from a limited number of sub-fossil and skeletal specimens (Strickland and Melville 1848; Kitchener 1993a, 1993b; Hume 2006; Rijdsdijk *et al.* 2009).