

# Sketches of Otohistory

## Part 3: Alfonso Corti

Joseph E. Hawkins

Department of Otolaryngology, Kresge Hearing Research Institute, University of Michigan, Ann Arbor, Mich., USA

### Early Years and Medical Studies

Alfonso Corti (fig. 1), scion of a noble Lombard house, was born on his family's estate at Gambarana, near Pavia, on June 15, 1822. His father had a gentlemanly interest in science and enjoyed the friendship of the great anatomist Antonio Scarpa (1747–1832), discoverer inter alia of the membranous labyrinth and its endolymph, who sometimes came out from Pavia to dine en famille. It is tempting to think that Scarpa may have encouraged the boy's interest in medicine so that young Corti might almost be considered a late offshoot of the great Bolognese medicointellectual line comprising four generations, from Malpighi through Valsalva and Morgagni to Cotugno and Scarpa. Of course, Scarpa was never one of Corti's professors at Pavia, having died 8 years before the lad began his medical education in 1840. Nevertheless, Corti's favorite study was microanatomy with Bartolomeo Panizza (1785–1867) and Mario Rusconi (1776–1849).

In 1845, despite opposition from his family, Corti moved to Vienna to complete his medical studies and to work in the anatomical institute of Joseph Hyrtl. By the end of the summer of 1847, he had passed his examina rigorosa, had written his dissertation on the vascular system of the sand lizard, *De systemate vasorum Psammosauri grisei*, and had withstood the formal disputation. He was then appointed by Hyrtl to be his Second Prosector.



**Fig. 1.** Portrait of Alfonso Corti. Bildarchiv des Institutes für Geschichte der Medizin der Universität Wien. From Politzer A: Geschichte der Ohrenheilkunde. Stuttgart, Enke, 1913, vol 2, p 22.

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Joseph E. Hawkins, PhD, DSc  
Kresge Hearing Research Institute, Department of Otolaryngology  
University of Michigan, 1301 East Ann Street  
Ann Arbor, MI 48109 (USA)  
Tel. +1 734 764 0215, Fax +1 734 764 0014, E-Mail josehawk@umich.edu

## Visits to European Microscopists

Despite his promising new position, Corti left Vienna upon the outbreak of the 1848 revolution. It is not clear whether his reason for doing so was political, patriotic or purely personal, but it has been suggested that he had made himself suspect there because he held 'somewhat liberal opinions'. It seems more likely that he may have favored Italian aims for nationhood and opposed the Austrian rule. At least, he next had a brief period of military service with Piedmontese forces, before embarking on a series of scientific visits abroad. The first of these was in Berne, where in 1849 he spent 6 months with Prof. Gustav Gabriel Valentin to learn more about the microscope and its uses for medical and biological research.

After Berne, Corti seems to have spent the remaining months of 1849 in London and Paris, paying what can only have been brief visits to a number of influential microscopists. One was the Scotsman Thomas Wharton Jones (1808–1891), who had studied at Edinburgh and had then moved south to become professor of physiology at the Charing Cross Hospital and the Royal Institution. Another of Corti's calls was on the zoologist Richard Owen (1804–1892), of the Museum of Natural History and the Microscopical Society. A third Cortian visit was to John Thomas Quekett (1815–1861), a microscopist who had made his first preparations at the age of 16. Perhaps the most distinguished of the Londoners visited by Corti was Sir James Paget, Bart. (1814–1899). Going on to Paris, Corti visited 2 well-known microscopists, Hermann Lebert and Charles-Philippe Robin.

## Würzburg

The chronology may not be entirely clear, but by the beginning of 1850 Corti had apparently received the invitation of the anatomist Albert Kölliker and had moved to Würzburg. There he worked in a small building that still stands on the grounds of the Juliusspital. It is known as the 'Alte Anatomie', but it is now used for lectures and concerts rather than for dissections. For the first 2 months of his stay, Corti was occupied with the cardiac muscle fibers, the branching muscle fibers of the frog's tongue and the retinal ganglion cells in their relation to the fibers of the optic nerve ('Verhältnis der Ganglienkugeln zu den Nervenfasern'); then in March he began his examination of the organon spirale and the nervus acusticus, as well as his observations of ciliary movement in the intestine of frog and toad larvae.



**Fig. 2.** Portrait of Jacobus Ludovicus Conradus Schroeder van der Kolk (painting by Jan Hendrik Neuman; engraving by Dirk Jurriaan Sluyter; private property, reproduced with permission).

In otoanatomy, Kölliker is best known for *Kölliker's organ*, which is not the developing organ of Corti as a whole (as is sometimes implied) but merely a group of tall, relatively undifferentiated cells that fill the inner sulcus, only to disappear later – thus presenting an early example of apoptosis.

In Würzburg, Corti established a warm friendship and studied with the professor of pathology, Rudolf Virchow (1821–1902). Of him Corti wrote: *'Mi trovo specialmente sodisfatto del democratico prof. Virchow, nel quale imparai a conoscere non solo un eminente istologo e patologo ma anch la più cara ed amabile persona che si possa immaginare.'* ('I am especially pleased with the democratic Prof. Virchow, in whom I have come to know not only an eminent histologist and pathologist, but also the dearest kindest person that you can imagine.')



**Fig. 3.** Pieter Harting in his office-museum in Utrecht. Collectie Universiteitsmuseum Utrecht. From Jamin H: *Kennis als opdracht: de Universiteit Utrecht, 1636–2001*. Utrecht, Stifting Matrijs, 2001.

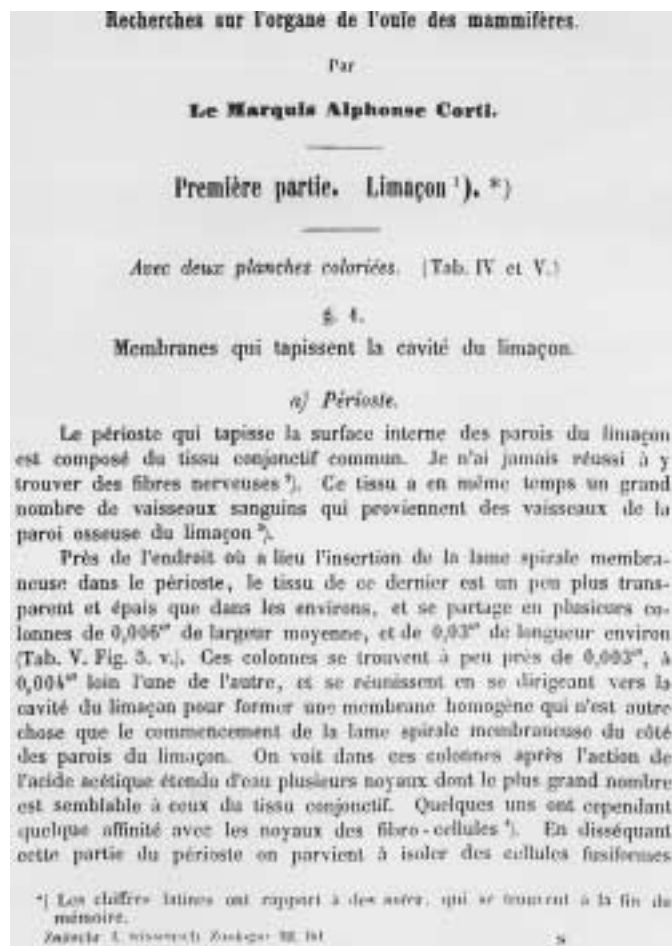
### Utrecht and Histological Techniques

It is not clear how long a time Corti spent in Utrecht, but his visits with Professors Schroeder van der Kolk (fig. 2) and Pieter Harting (fig. 3) seem to have been made in the autumn of 1850. Later he recalled how pleasant and important that visit turned out to be. He wrote: *'In tutti I miei viaggi Bern e poi Utrecht lasciarono in me le più cari ed indelebile ricordanze.'* ('Of all my trips, Berne and then Utrecht left me with the fondest and most indelible memories.') Pieter Harting (1812–1885) was an early convert to the Darwinian theory of evolution. Harting wrote a book about it and a biography of the 17th century physicist and astronomer Christiaan Huygens, but his best-known work was his 4-volume treatise on the microscope and its uses (1848–1854).

As he relates in his famous publication of 1851, in Utrecht Corti learned to use *'la méthode dont je me suis servi pour conserver plusieurs préparations du limaçon. Cette méthode m'a été communiquée pendant mon séjour en Hollande par l'obligeance de M. Schröder van der Kolk et de M. Harting, professeurs à l'université d'Utrecht. Le dernier de ces messieurs en a donné une description dans son grand ouvrage qui vient de paraître sur le microscope (Het microscoop, deszelfs gebruik, geschiedenis en tegenwoordige toestand. Tweede deel, p. 347)* ['the method that I have employed to preserve several preparations of the cochlea. This method was given to me during my stay in

Holland through the kindness of M. Schroeder van der Kolk and M. Harting, professors at the University of Utrecht. The latter of these gentlemen has described it in his great work on the microscope that has just appeared (*The Microscope, Its Use, History and Present Status*. Part 2, p. 347)'].

From Utrecht Corti returned to Würzburg to complete his study *sur 200 limaçons au moins* ('of at least 200 cochleas') from cattle, swine, sheep, cats, dogs, rabbits, moles, mice and man, and to write his famous paper, *Recherches sur l'organe de l'ouïe*. It appeared the following year in Kölliker's journal (*Zeitschrift für wissenschaftliche Zoologie* 1851;3:109–169; fig. 4, 5). In the spring of that year, while he was in Paris to supervise its publication, news of his father's death reached him. He wrote to Valentin: *'... stavo la primavera scorsa tranquillamente a Parigi aspettando gli esemplari stampati delle mie Recherches ecc. per partire poi a mio agio per l'Italia ed avere la gran consolazione di visitarla a Berna, quando affari pressantissimi mi costrinsero a partire precipitosamente per Torino. Qui giunto doveti occuparme della divisione dell'eredità di mio padre ...'* ('... this past spring I was in Paris, peacefully awaiting the printed copies of my *Recherches* etc., then planning to depart at my leisure for Italy and to have the great comfort of visiting you at Berne, when suddenly the most pressing family affairs forced me to leave for Turin. When I got there I had to busy myself with dividing up my father's legacy ...').



**Fig. 4.** Alfonso Corti: Recherches sur l'organe de l'ouïe des mammifères. *Z Wiss Zool* 1851;3:109–169.

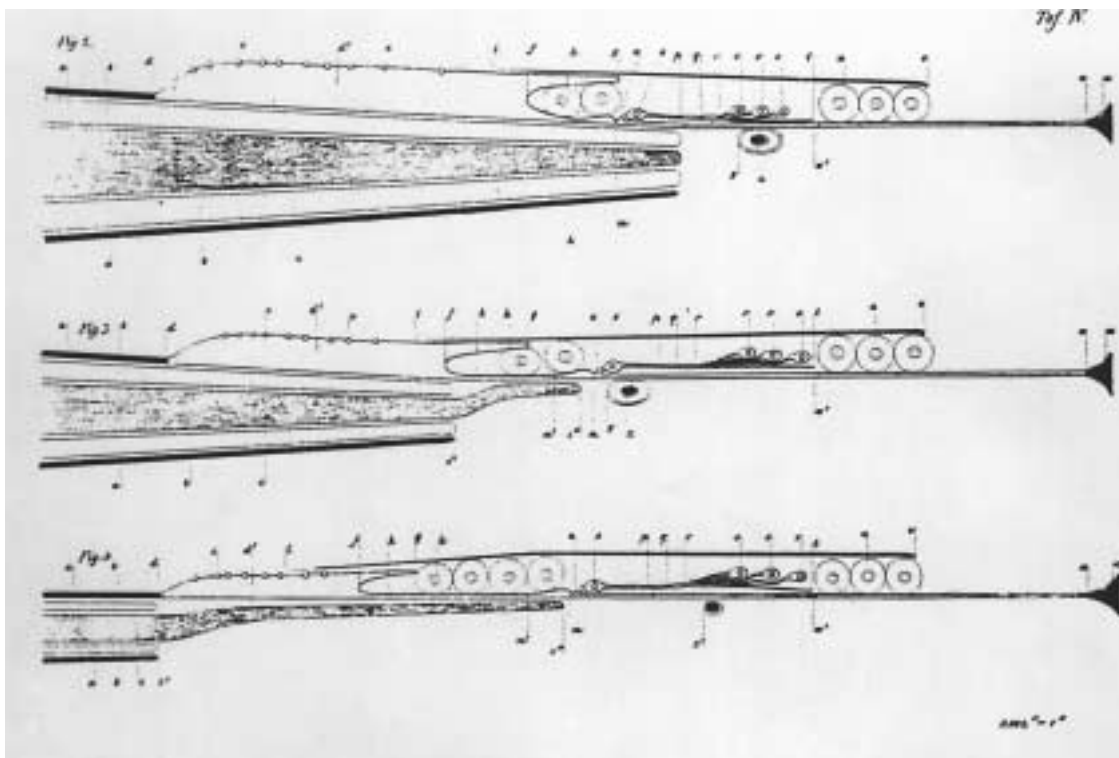
It is not apparent that Corti ever returned to Würzburg or that he ever dissected another inner ear, although he had written among the notes appended to his *Recherches* ... that he hoped soon to publish a report on the vestibular system. In a letter to Valentin from Turin in April, 1852, he explains: '... *noiosi affari de famiglia me impedirono sempre di riprendere i miei studj.*' ('... boring family affairs have always kept me from taking up my studies again.') Again from Turin, in November, 1853: '... *avendo dovuto tornare costì per alcuni affari di famiglia (hole sie einmal der liebe Teufel!).*' ['having had to come back here because of some family affairs (may the dear devil take them!).'] In his letters to Valentin and others, he often wrote that he was about to resume his work by taking up the study of the electric organ of torpedo and other fishes, but he never did so. (He had also made promises of

future inner ear studies and publications in the 1851 paper, but those were not to be.)

### Corti's Attitude toward Kölliker

Corti does not seem to have recorded his feelings toward Kölliker during his stay in Würzburg, unless in letters to family members, but his later correspondence reveals growing resentment. Its origin is by no means clear, since Kölliker seems always to have given him full credit for his discoveries, especially in his christening of the *organ of Corti*. Nevertheless, he accuses Kölliker of being excessively eager for priority, as in the following excerpt from a letter: '*L'avverto che nella gazetta medicale di questo mese si trova una comunicazione di Remak all'academia di Parigi, che ha per iscopo di dare una giustissima staffilata a Koelliker il quale non fa buona figura per la sua mania di priorità a spese altrui (quà di Remak e di me).*' ['I am letting you know that in the *Gazette Médicale* for this month there is a communication from Remak to the Paris Academy, which is intended to give a well-deserved rebuke to Kölliker, who looks bad, with his mania for priority at the expense of others (as in Remak's case and in mine).']

In 1853, Corti was invited to participate in the autopsy of an elephant that had died at the Roman zoo. He complied and wrote an account of his observations (which had nothing to do with the beast's ears) to Kölliker, who promptly put it into his journal. Because of editorial changes, omissions and perhaps lack of opportunity to read proof, this act of publication infuriated Corti, who wrote to Valentin: '*Ora Ella avrà letto la mia breve memoria istologica sull'elefante ... Mi duole che non mi mandarono freie Exemplare da madarle. Ora ne farò ricerca. In questo circostanza l'ingenuo Koelliker comise verso di me un'azione inqualificabile e tale che in avvenire i miei poveri lavori non saranno mai più pubblicati in quella Zeitschrift.*' ('By now you will have read my short histological memoir about the elephant. I am sorry that they did not give me reprints to send to you. Now I will look for some. In this instance the naïve Kölliker acted in contemptible fashion toward me so that in the future my poor works will never again be published in that *Zeitschrift.*')



**Fig. 5.** Drawings of the organ of Corti from the famous paper.

### Corti's Postscientific Career and Last Years

Corti's scientific career, from his enrollment in medical studies at Pavia to the publication of his paper on the elephant lasted at most a mere 14 years. Whatever the cause of his abandonment of scientific pursuits, it sorely disappointed his academic friends and admirers. At the same time, it must have pleased his family (fig. 6), who no doubt considered such professional activities far too bourgeois for a nobleman who had just inherited the family title, Marchese de San Stefano Belbo. As early as 1851, Corti wrote: *'Mi indirizzo: Marquis Alph. Corti. Turin. Poste Restante. La prego di omettere il titolo di Docteur per riguardi da mi indipendenti ed a Lei pure noti.'* ('My address: Marquis. Alph. Corti. Turin. General Delivery. Please omit the title of Doctor, for reasons that are none of my own but known to you.') Two years later, Valentin reported: *'Herr Corti lebt gegenwärtig abwechselnd in Genua, Nizza, oder auf dem Gute seines Schwagers bei*



**Fig. 6.** Alfonso Corti and his family: mother, wife and children in 1859.

*Ventimiglia.* ('At present M. Corti is living, by turns, in Genoa, in Nice and on his brother-in-law's estate near Ventimiglia.') Although the Kaiserlich Leopoldinisch-Carolinische Deutsche Akademie der Naturforscher elected him a member in 1854, the next year his friend De Filippi lamented: '*Je vous le dis en confiance et avec le plus profond regret: le Marquis Corti a laissé définitivement de coté la science pour le blason.*' ('I tell you in confidence and with the most profound regret: the *Marquis* Corti has permanently cast science aside for the sake of the coat of arms.') He had married the daughter from a neighboring estate, Maria Bettinzoli. That move seems to have met with general approval. '*Notre ami le Marquis Corti s'est marié, et vient de fixer son domicile à Milan ... Il a été très heureux dans le choix.*' ('Our friend Marquis Corti has got married and has just established his home at Milan. He has been most fortunate in his choice.')

For the rest of his life, i.e. for the next 20 years (1856–1876), Corti lived at Villa Mazzolino (Casteggio), where he devoted himself to the practice of scientific oenology and to the management of his estate. Unfortunately, he was gradually developing arthritis deformans. As early as 1854 he had written: '*Eine nicht gefährliche aber sehr langweilige Krankheit hat mich bis jetzt zur Ruhe genöthigt.*' ('A disease that is not dangerous but quite tedious has kept me inactive up to now.')

His young wife presented him with a son, Gaspare, and a daughter, Bianca, but in 1861 she died, leaving him with the responsibility of rearing the children. Corti's last 15 years were further darkened by the inexorable progress of his crippling illness. In 1876, on the second of October, he died at Corvino San Quirico, near Casteggio, never (so far as we know) having returned to Berne, Utrecht, Würzburg or even Paris.

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Über Flimmerbewegung bei Frosch- und Krötenlarven. *Verh Phys Med Ges Würzburg* 1850;1:191–192.

Recherches sur l'organe de l'ouïe des mammifères. Première partie: limaçon. *Z Wiss Zool* 1851;3:109–169.

Histologische Untersuchungen angestellt an einem Elefanten, aus einem Schreiben des Marquis A. Corti, in Turin, an Prof. A. Kölliker. *Z Wiss Zool* 1854;5:87–93.

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