MEDICINA NEI SECOLI ARTE E SCIENZA, 2 (1990) 47-60
Journal of History of Medicine

Articoli/*Articles*

THE BRAIN ANATHOMY BY STENSEN (STENO)

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SUMMARY

THE BRAIN ANATHOMY BY STENSEN (STENO)

Delivered on spring 1665 with the patronage of Parisian Melchisedec Thévenot, this speech sets the basis for a more organic and modern study of the encephalon, analizing critically before made attempts of explaining its functions, errors due to the not always orthodox different techniques of observation, the various and obscure terminology used to indicate its different components, the designer's incapacity to reproduce exactly its structure.

Niels Stensen spent fourteen months in Paris (from november 1664 to December 1665) and he was guest with his friend Jan Swammeerdam (1637-1693) of tre rich french maecanas Melchisédec Thévenot (1620-1692), who had organized[1] a provate club[2] which assembled best french and foreign intellectuals.

In his summer house in Issy, Steno read, during the spring of 1665, his *Discorso sull'Anatomia del Cervello*, which for the present did not earn great attention in scientific world, because his ideas were really before time in comparison with culture of contemporary scholars: as a matter of fact, it is not a simple refutation of the most qualified theories about structure and function of brain, but *a valid programm of base for a new and original method of studyng encephalon*[3].

Parole chiave/*Key words:* Brain - Anathomy - Stensen

DISCORSO SULL'ANATOMIA DEL CERVELLO

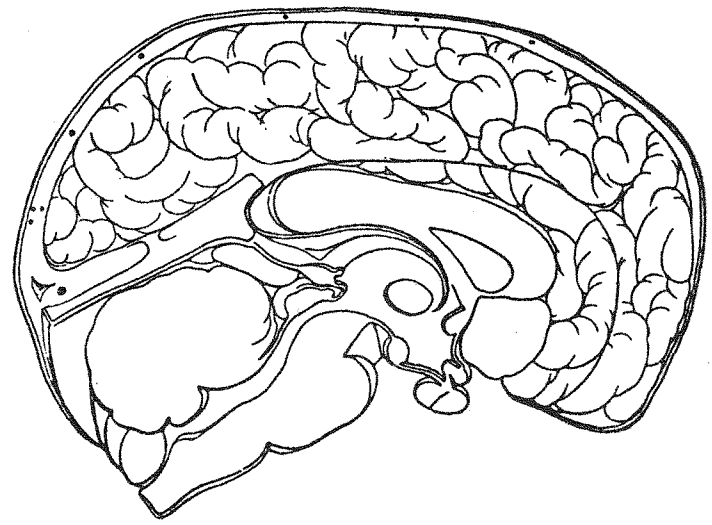
Steno begins his work saying that few is known about *"l'organo principale dell'anima mostra e lo strumento ond'ella segue mirabili azioni"*, in order to try to build a valid theory about his functions: *"Quel che si può riconoscere al momento è l'esistenza di una sostanza bianca da cui hanno origine i nervi, e di una grigia, la quale — svolge apparentemente — solo funzioni di rivestimento della prima, nonché l'insussistenza delle teorie che vogliono nelle cavità ventricolari la presenza di spiriti animali o escrementi"*.

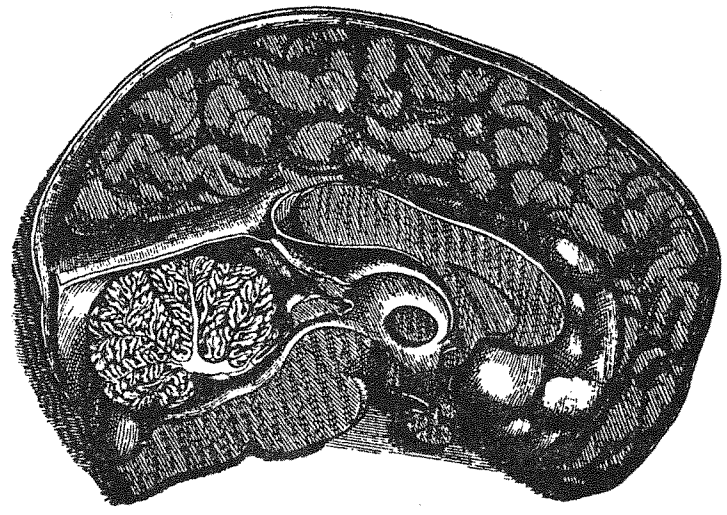
He reminds descriptions of the past about structure of encephalon, their fanciful functional interpretations, obscure and improper terminology and exposes and criticizes firmly cartesian ipothesis[4], saying that its daring ideas were not confirmed by anathomy, in particular ad far as epiphysis is concerned[5].

He adds that current iconography is inaccurate and inadeguate, excluding the ono of Francois de la Böe (1614-1672) and Thomas Willis (1621-1675):[6] as a matter of fact, anatomists and surgeons had not studied brain deeply, becouse they met too many difficulties in opening skull-cap through saw and drill[7] and draftsmen were not able to reproduce faithfully the brain, which was isolated with manipulations which changed the real shape of its fleshy substance.

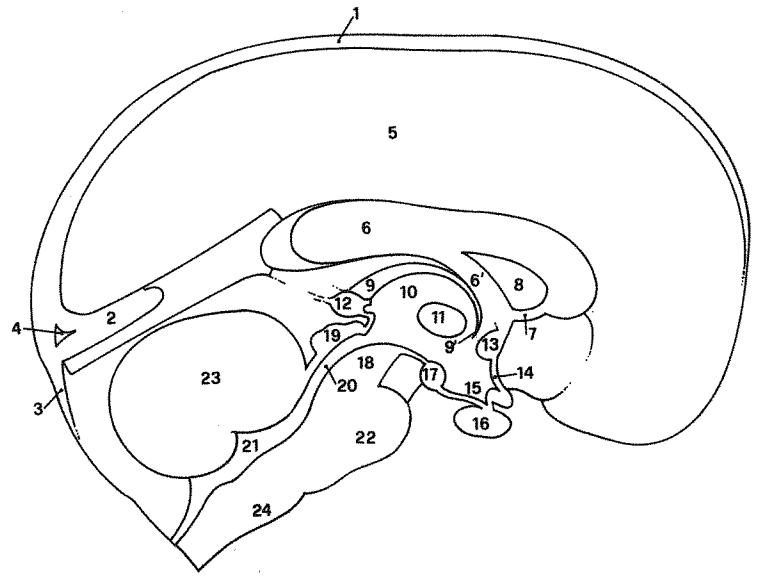
As methods of study were inadeguate, ancient scholars had let poor knowledge, and it was necessary a great caution working on such delicate material, Steno says that to reach the truth a good anatomist (who examines the brain of different animal species in every time of life, measuring it and making many sections mantaining its original structure) is expected to work together with a skill draftsman, who shows clearly, in many pictures, what the former puts in evidence, superimposing different studies in a structural and integral vision.

Steno adds moreover 4 Tables, which ahow the iconographical demonstration of encephalon's structure, which is still valid;

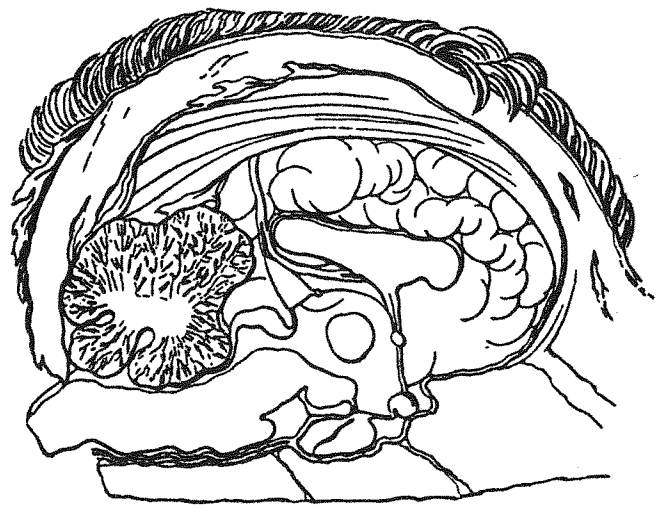


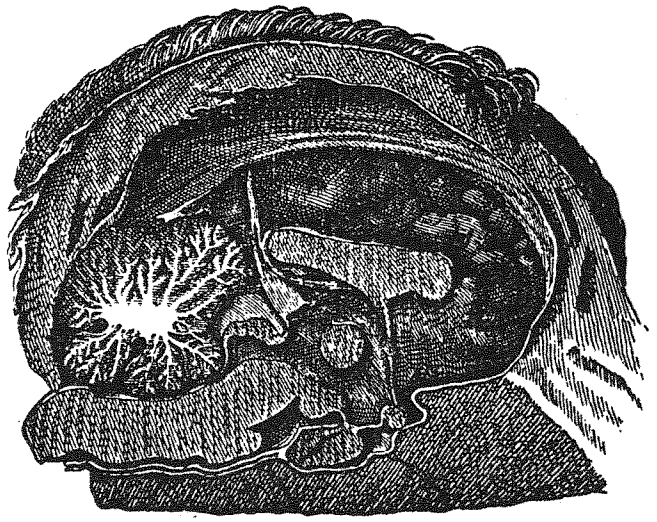


I Table

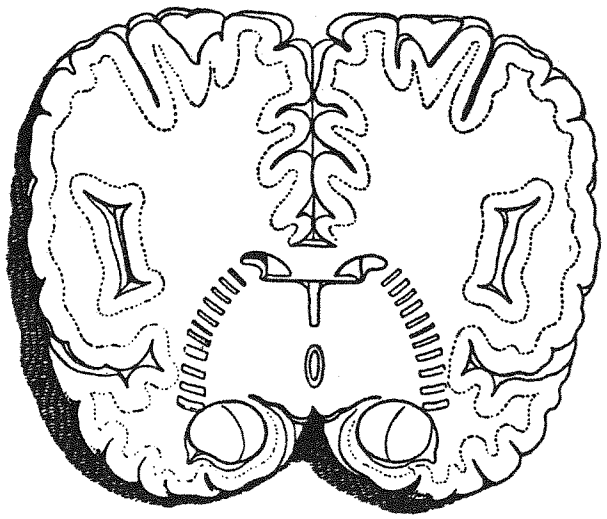


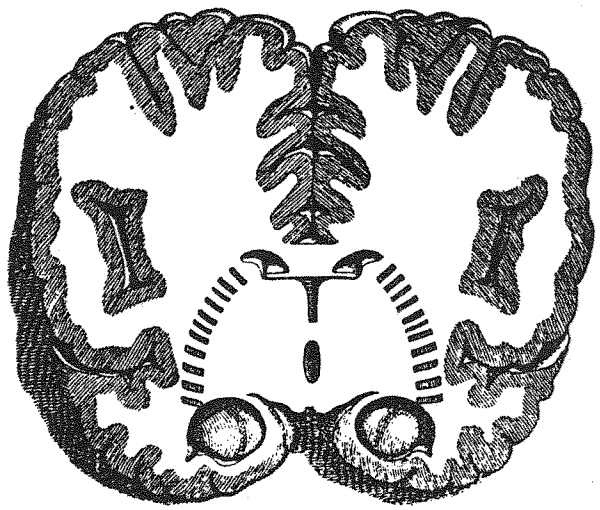
I Table (description)



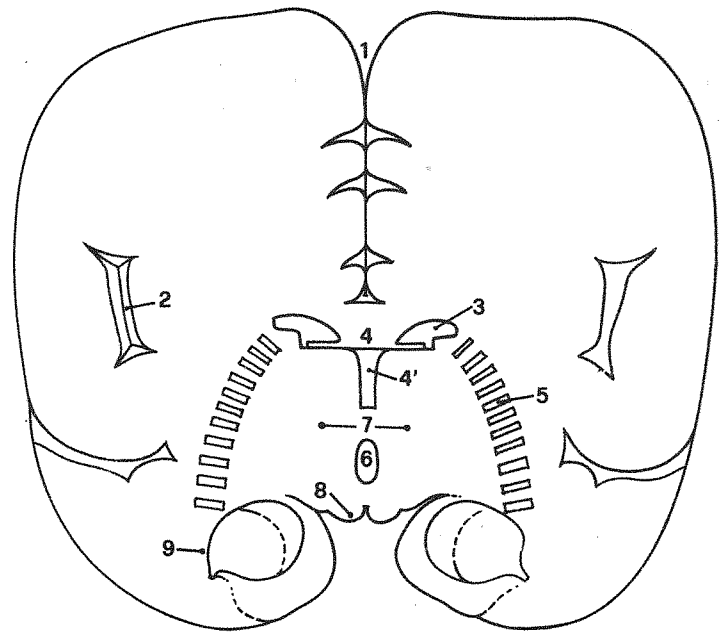


II Table according to Descartes

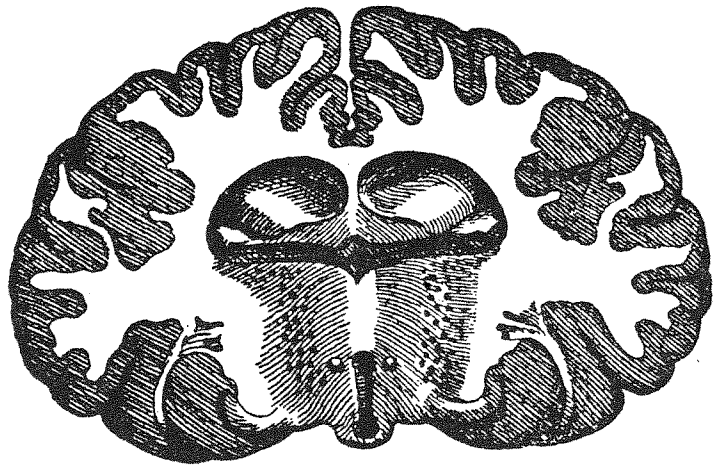


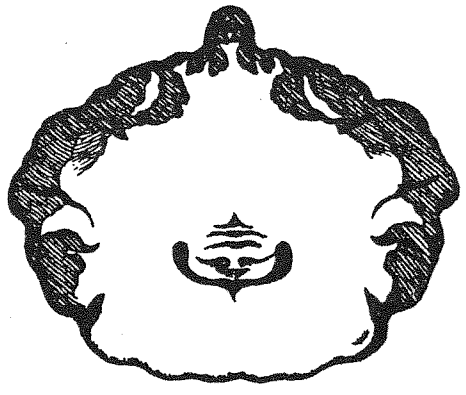


III Table

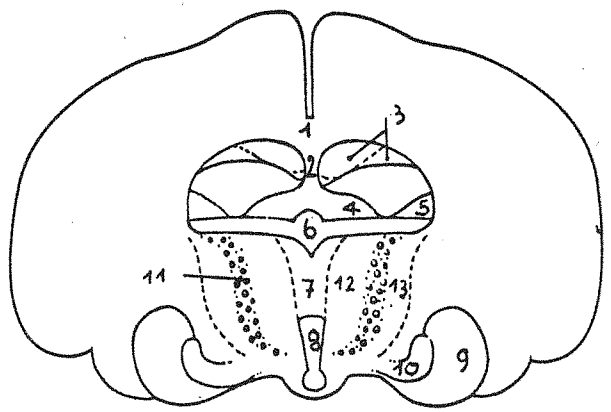


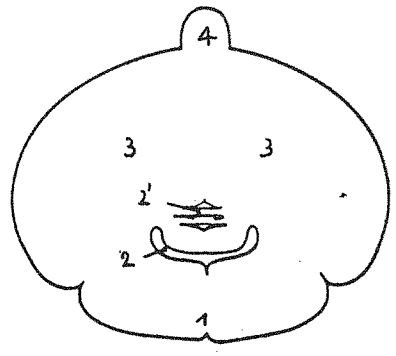
III Table (description)





IV Table





IV Table (description)

in the first one, which shows a medio-sagittal section of encephalon with great precision, it is possible to recognize:

1 - inferior sagittal sinus
2 - right sinus
3 - occipital sinus
4 - torcular of Erophilus
5 - brain convolutions
6 - callous body with fornix
7 - rostral lamina
8 - semi-transparent septum
9 - superior choroid coat, which ends, anteriorly, with interventricular orifice[9]
10 - medial surface of thalama and ipothalamo in front of the third ventricle
11 - intermediate commissure
12 - epiphysis
13 - anterior commissure
14 - terminal lamina
15 - infundibular recess (between opticum chiasma and tuber cinereum)
16 - ipophysis (divided in anterior and posterior lobes)
17 - mamillary bodies
18 - cerebral peduncles
19 - quadrigeminal lamina
20 - aqueduct of Silvius
21 - IV. th ventricle
22 - pons varoli
23 - cerebellum
24 - bulb

The second table is a reconstruction of encephalon, wich Steno did, following cartesian thesis, with particular attention to morphological structure of epiphysis.

The third table corresponds to a frontal section of encephalon at level of mamillary bodies, where it is possible to see:

1 - part of interemispherical scissure
2 - insula
3 - central part of lateral ventricles
4 - callous body with semitransparent septum
5 - inner capsule
6 - third ventricle
7 - optic thalami and interthalamic commissure
8 - mamillary bodies
9 - hippocampus, which sticks out with Ammon's horn in the temporal part of side ventricles

The fourth table is formed by two pictures. The smaller represents a transverse section between pons and cerebellum:

1- pons
2- IV.th ventricle with lingula[2]
3- cerebral hemispheres, with tuber vermis[4]

The greater corresponds to a section, which is done slantways forward, at the level of tuber cinereum, where it is possible to see:

1- callous body
2- semitrasparent septum
3- side ventricles at the level of choroid plexi
4- fornix
5- caudate nucleus
6- III. th ventricle
7- interthalamis commissure
8- IV. th ventricle
9- uncus of hippocampus
10- hem of hippocampus
11- inner capsula
12- optic thalamus
13- lenticular nucleus

Reading Steno's *Discorso sul cervello* and analizing its tables, we can, though actual knowledges, attribute him the merit of a modern formulation to the study of Central Nervous System,

above all as far as terminology is concerned; he managed, moreover, to specify relationships of callous body with brain convolutions and the voult of third ventricle, showing the right shape and position of epiphysis and the inner connection between infundibulum and ipophysis, discovering the intermediate or interthalamic mass.

BIOGRAPHICAL NOTES

Niels Stensen, fourth son of the goldsmith Sten Pedersen and his second wife Anna Nielstochter, was born in Copenhagen the 1.st january 1638[9] and in 1656, after the secondary school, he entered Medical Faculty, where he was taught by Paulli (1603-1680) and Thomas Bartholin (1616-1680). In april 1660 he went to Holland and, after having frequented for some times Gerard Blaes (1625-1692) in Amsterdam, he went to Leyda, in order to know Francois De La Boe (1614-1672), where he staied till the end of march 1664, when he came back to Copenhagen, for family's interests and hoping to find a job as Professor of Anatomy.

Jan H. Paulli, son of his old Teacher, was choosen and the 9.th september he went to Paris where he arrived the 7.th november: here he knew that Senatus Academicus of Leyda, as suggested by De La Böe, had attributed him the Degree in Medicine, the 4.th december of the same year: it was a rare case and it showed that he was greatly considered for his original researches and for his deep culture.

Towards the end of 1665, Steno went to Montpellier and then, in february of the following year, reached Leghorn by sea and went to Pisa, where he was quest of the Grand duke Ferdinando II, who, in june, gave him lodgings in Palazzo Vecchio, in Florence, and a monthly salary, with the task of Anathomy in the hospital of Santa Maria Nuova.

In autumn 1668, he left Florence for a long journey through Italy, Germany, Holland and he came back the 10.th july 1670:

he was kindly received by Cosimo III (his father Ferdinando II had died), who let him salary and task, giving him lodgings in Piazza San Marco.

In december 1671, Christian IV of Denmark, after promulgating the law about "freedom of coscience", asked Steno[10] to come back as "royal anatomist" and teacher of his son, with an annual salary of 400 thalers.

Steno left Florence with the consent of the Grand Duke, the 19.th may 1672 and reached Copenhagen the 3.rd july, reading the opening lecture the 29.th november: the law, however, precluded him the professorship, which was reserved to protestant professors; in july 1674 he came back to Florence, assuming the task of teacher of the heir to the Grand Ducky (the future Ferdinando III) and abandoning every scientifical activity, being interested only in Theology.

He was ordained the 4.th april 1675 (Eastern Monday), when he was 37 years old, he celebrated the first Mass in the Church of Santissima Annunziata; the 22.nd 1677, after having been consecrated bishop of Titiopoli by Innocenzo XI, he became vicar-apostolic in North Germany, he reached the 19.th november.

He died in Schwerin, capital city of Mecklemburg, the 25.th november 1686[11], for retention of urine, due to uretral calculosis: Cosimo III, who had remained in friendly relations with him, made his corpse come by sea (in a case with the label: "books") from Hamburg to Leghorn and then to Florence, where it was buried the 13.rd october 1687 in the loculus nr.212 of the crypt of St. Lorenzo whence it was transferred the 23.nd october 1953 in a sarcophagus in a chapel on the right side of the Basilica.

NOTES AND BIBLIOGRAPHY

[1] After having acted for his government in Rome and Genoa for many years, he was called in 1685 librarian of Luigi XIV and became member of the Royal Academy of France, which was founded by Richelieu in 1639, for his studies in Humanities.

[2] Its statute and aims imitated the ones of the Academy of Cimento, in Florence (which was founded by Leopoldo de' Medici in 1657) of which he was corresponding member and which gave life to the Académie Royale des Sciences.

[3] As we read in the chronicle of Jan Chapelein (1595-1674), which attended the meeting, together with the surgeon Claude Morel (1633-1703), the anatomist Claude Jardy (1606-1671), the physician Pierre Bourdelot (1610-1695), the biologist Pierre Borel (1620-1690).

[4] WILLIS G.B., *Exposition anatomique de la structure du corps humaine*, Paris 1732.

[5] He referred above all to be philosophical system of René Descartes (1586-1659) in his treatises "About functions of soul" and "About man", which were published in 1649 and 1662.

[6] He had done many experiments on animals and men in the anathomical amphitheatre of Saint Come in Rue des Cordeliers, now De l'Ecole de Médecine.

[7] They have the merit of having recognized the duct which puts in connection the III and the IV ventricles and the cerebral side scissure, the frontal polygon, which is placed at the base of encephalon and the eleventh pair of cranial nerves or spinal accessory.

[8] Steno says that it would be very important to have a liquid which solved cranial bones and put in evidence brain, without changing its shape and structure.

[9] Following julian calendar, which is still in use among protestant people, while in catholic countries gregorian calender had been introduced since 1582: in this latter case, as there is a difference of ten days, Steno was borne the 11.th of January.

[10] He had abjured Lutheranism the 2.nd November 1667, taking up catholic religion.

[11] The 5.th December, following gregorian calender.

MEDICINA NEI SECOLI ARTE E SCIENZA, 2 (1990) 61-73
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REGULATION FOR "SAVING" THE DROWNED IN ITALY (XVIII-XIXth CENTURY), WITH PARTICULAR REFERENCE TO THE REPUBLIC OF VENICE

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SUMMARY

REGULATION FOR "SAVING" THE DROWNED IN ITALY (XVIII-XIXth CENTURY), WITH PARTICULAR REFERENCE TO THE REPUBLIC OF VENICE

The autor gives a brief chronological syntesis, starting from the VXIII century, of the various provisions issued in Italy, with particular reference to the Republic of Venice, relating to the saving of the drowned, as an introduction to the discipline of "Life-Saving" oriented Swimming.

The need of doing something in case of asphyxia from drowing was presumably felt when man first came into contact with water, which was an element quite unfamiliar to him, right from the beginning of mankind, so that, in order to bring life back to the asphyxiated, sundry methods were employed, whether rational or due to religious prejudices or to magical beliefs.

Improvisation, guided by intuition as well as by an empirical approach, led to finding out the first rudimental ways of intervention: feeling the pulse, skaking and rubbing the body, stimulating vomiting to lip blowing and warming up the body turned cold by the shock.

However, the need of codifying these sundry methods[1] which had been worked out in the course of time and had by then been tested through experience and in other cases of asphyxia as well, was only felt in the XVIII century, the Age of Enlightment and renewal when science and culture were placed at man's service.

Particularly, the awareness that it was possible to save many human lives started to spread out with both private and public Associations.

Parole chiave/*Key Words:* Reanimation - History - Legislation - Venice Republic.