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SOEMMERRING AND THE SUBSTANTIA NIGRA

CREDIT for the first description of the substantia nigra has usually been awarded to the well-known German anatomist and physician Samuel Thomas von Soemmerring (1755–1830). Medical dictionaries still use as a synonym for that structure the term 'Soemmerring's substance' (Wakeley, 1953; Dobson, 1962), and although Sano stated many years ago (Sano, 1910) that priority ought to be accorded to Vicq d'Azyr who in several of the plates of his *Traité d'Anatomie et de Physiologie* (1786) clearly illustrated the substantia nigra, which he described as 'tâche noire' or 'locus niger crurum cerebri', and that the error was due to Luys, this is not commonly recognized. For example, Stern (1966) states that 'the earliest description of the substantia nigra is generally attributed to Soemmerring'.

Stern goes on to say that Soemmerring 'distinguished (1778) between the ashen or grey matter (substantiae cinereae) of the cortex and the brain-stem—"The mass is tinged a dark colour which in adults resembles neither the whiteness of the medulla nor the cinereal part of the brain but is, so to speak, midway between the cinereal and medullary parts"—and described a particular aggregation of dark substance within the cerebral peduncles. Soemmerring was familiar with the intimate relationship of this pigmented structure to the emerging third nerve fibres and observed that pigmentation was less distinct in the brains of new-born children and fetuses.' Stern maintains, therefore, on the one hand, that Vicq d'Azyr failed, in 1786, to acknowledge Soemmerring's priority, but that on the other hand, 'most modern anatomists equate "Soemmerring's substance" with the substantia nigra.'

Soemmerring published in 1778 a work entitled: *De basi encephali et originibus nervorum cranio egredientium libri quinque. Cum IV tabulis aeneis*, Göttingen, apud Abr. Vandenhoeck viduam, 1778, 4°. According to Choulant (1852 rep. 1962), Vol. II (pp. 1–112) of Ludwig's *Scriptores neurologici minores*, Leipzig, 1791–94, 4°, is an enlarged edition of Soemmerring's book of 1778 revised by him. With the aid of both these texts, and a fresh human brain, it has, we think, been possible to clear up the confusion.

On page 32 of the 1791 revision, paragraph XI reads as follows:

Diductis lobis posterioribus ea regione, qua nervorum opticorum origines ab eis tectae apparent, ut in tabula secunda factum esse vides, anteriores lobos adeo confluere et coire cum posterioribus cernes, in uniformem, colore in adultis neque albedinem medullae imitante, neque tamen instar cinereae cerebri partis fusco, sed medio quasi inter cineream et medullarem tinctam massam, ut discernere eos amplius nequeas. Utrinque in ejus substantiae, e collecta totius hemisphaerii medulla natae (processus medullaris) initio, praeter aliqua, a vasorum surculis e vasculosa, qua tegitur, membrana in illud penetrantibus relicta foraminula, vix quidquam sat notabile invenies, ni forte ad hunc locum origines nervi primi paris referre placeat, cujus nervi gyrus superficiali tantum sulco saepius ab eo processu distingui solet.

(Following removal of the posterior lobes in that region where the origins of the optic nerve are covered by them you will see the anterior lobes coalesce and unite with the posterior to form a uniform mass, the colour of which in adults resembles neither the whiteness of the medulla, nor yet is dark after the fashion of the grey matter of the brain, but as it were midway between grey matter and medulla, so that one is no longer able to distinguish between them. Where this substance begins on either side, arising as it does from the medulla of the whole hemisphere (the medullary process), there is hardly anything worth noting except several tiny foramina due to the twigs of vessels which penetrate into the origin of the substance from the overlying vascular membrane; unless you wish to attribute to that area the origin of the first pair of nerves, the gyrus of which is separated from the process only by a superficial sulcus.)

This is clearly a description of the anterior perforated substance, and it is to this paragraph that Stern is in fact referring when he says that Soemmerring distinguished between the grey matter of the cortex and the brain stem. Soemmerring then goes on to describe (paragraph XII) the formation of the crura cerebri from the medullary projection (processus medullaris) of either cerebral hemisphere, and writes as follows:

. . . tum iidem processus, super nervis opticis, qui ligaturae instar illos amplectuntur, arcte satis uniti, retrorsum pauloque deorsum migrantes, vulgari nomine *pedunculorum* vel *crurum cerebri*, maxima sui parte, fascibus quasi nerveis compressis, quorum indicium exhibent incisiones illae satis profundae quas constanter in unoquoque ab exterioribus versus posteriora convergentes reperi, constare et conflari videntur, et . . . in unum corpus coeuntes, foveolam tantum inter se relinquunt, qua eos quodammodo determinari dicere possis. Medio dissecti hi processus intrinsecus substantiam nigram plane singularem ostendunt, aegre verbis describendam, facillime vero dissectionibus vel accuratissimis Vicq d'Azyrii iconibus demonstrandam.

(Then these projections, firmly united above the optic nerves which clasp them like ligatures, proceed backwards and somewhat downwards, being commonly called the cerebral peduncles or crura, and for the greater part of their length, are seen in contact and flowing together, as if falces of nervous tissue had been compressed, evidence for which is provided by those fairly deep incisions, which I have found constantly in every single case converging from the exterior towards the posterior, and . . . uniting into one body, leave only a small groove between them, by which it could be said they were in a way demarcated. When these projections are separated medially, they plainly show in their interior a specific black substance difficult to describe in words, but easily demonstrable in dissections or in the highly accurate plates of Vicq d'Azyr.)

There is no doubt that this passage refers to the substantia nigra and it is obvious therefore that in 1791, Soemmerring himself was quite happy to accord priority in its description to Vicq d'Azyr.

The next sentence (p. 33, lines 1–2) reads: 'Caeterum quoad colorem illa crura in foetibus, et infantibus neonatis longe ab albedine nervi tertii paris abesse observavi.' ('Moreover, as far as colour goes, I have observed that these crura in foetuses and neonates are far removed from the whiteness of the third nerve pair.')

Soemmerring is thus referring in this sentence to the colour of the crura in the

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foetus and neonate and not to the degree of pigmentation of the substantia nigra itself as Stern implies.

If we now turn to the 1778 version (Liber I, Sect. II, 11 and 12) we find that the Latin text of both these paragraphs is identical with that of the 1791 version except in two particulars. The earlier version lacks a phrase describing the groove behind the infundibulum (XII 11 2–3 1791) which is irrelevant to our argument—and it lacks the crucial two-and-a-half lines ‘Medio . . . demonstrandam’ in which, in the 1791 version, the substantia nigra is described.

It is thus clear that confusion has arisen as a result of the failure of later writers to refer to the text of 1778; that Soemmerring had every reason not to claim priority and did not in fact do so; and that Sano’s account of the matter was correct and should be recognized as such.

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PRE-SURGICAL SEDATION, MONTPELLIER c.1393: TESTIMONY OF LAWRENCE OF LINDORES

THE narcotic properties of certain plants—mandrake and poppy, for instance—were well known in ancient and medieval times. Some medical writers mentioned the use of such properties for surgery; among them Dioscorides, whose work was used by both ‘Arabian’ and western Christian physicians in the middle ages, and Celsus, whose work suffered such ill-merited oblivion until it was rediscovered by Pope Nicholas V (d. 1455). But not only medical men were interested in the matter.

Other writers of antiquity, including Demosthenes (Pseudo-Demosthenes?) and Plato, referred to such narcotic properties; as did Christian preachers, among them Ambrose, Clement of Alexandria and Cyril of Alexandria. The last-named mentioned that physicians in his day used mandrake as a soporific.