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PIONEERS IN NEUROLOGY

Scribonius Largus (probably before 1CE–after 48CE)

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The use of transcranial electrical current to stimulate the brain may be considered a twentieth-century technique by some and a futuristic tool by others; a third group remains uncertain [1, 2]. Actually, the first evidence of therapeutic application of transcranial electric current dates back to 47CE, when the Roman physician Scribonius Largus used live torpedo fishes to treat headache, taking advantage of the numbing effect induced by the electric fish [2], although the concept of electricity did not become clear until the eighteenth century.

Little is known about the life of Scribonius Largus, one of the first authors to write about medicine in Latin in his masterpiece, the *Compositiones*. This work had a strong impact on future clinicians; indeed, subsequent authors recalled his prescriptions, as quoted by Galen. The only known manuscript witness was discovered in 1974 in Toledo by Sergio Sconocchia (Toletan, Chapt. 98.12; XVI c.) [3], providing a more complete and reliable version of the *Compositiones* and furnishing significant linguistic and historical information, with respect to the *editio princeps* of Ioannes Ruellius (1528), which is based on a lost handwriting, especially if compared to the *De medicamentis liber* by Marcellus.

Scribonius Largus is thought to come from Sicily, or alternatively sojourned there for a long time. This conclusion is based on his knowledge of Sicilian plants, like the *crocus Siculus*, or Sicilian hunters' precautions against snakebite, and also his knowledge of Sicilian physicians, like his teacher Apuleius Celsus (born in *Centuripae*), and other elements inherent in Sicilian culture. Congruously, the language that Scribonius used in his work may be defined as Latin–Greek, a Latin strongly affected by Greek, plausibly his mother tongue. Some academics think he was an *ingenuus*, a free-born man, while others suggest he was probably a freedman [4]. Scribonius was probably in Rome during part of the reign of the Emperor Augustus (27BCE–14CE), and at least some periods during the reigns of Tiberius (14–37CE), Caligula (37–41CE), and finally Claudius (41–54CE).

He dedicated the *Compositiones* to Gaius Iulius Callistus (in Rome 38CE, died 51CE), a freedman at the Claudian court. Callistus personally consigned the work to the Emperor (Ep. 13, *tradendo scripta mea Latina medicinalia deo nostro Caesari*) [5].

Scribonius may have studied medicine during the last period of the reign of Augustus or at the time of Tiberius; he accompanied Claudius on his campaign to Britain in 43–44CE, perhaps as an army doctor (Comp. 163, *cum Britanniam peteremus cum deo nostro Caesare*), where he had the opportunity to learn about new remedies and plants. He wrote the *Compositiones*, at least in part, whilst he was abroad, probably in the years 43–47CE (Ep. 14, *sumus enim, ut scis, peregre nec sequitur nos nisi necessarius admodum numerus libellorum. Postea tamen, si et tibi uidebitur, ad singula quaeque uitia plures compositiones colligemus*) [5]. To complete his work, Scribonius drew from Greek medicine and previous Roman scientific production. The *Compositiones* is a compendium of 271 chapters, listing composite remedies from the vegetable, mineral and animal kingdom. He states that he only included remedies tested by him personally or, in few cases, by other trusted physicians [5].

Scribonius was the first to report and document the use of the torpedo fish (*νάρκη* in Greek, to indicate the numbness produced, a term already used by Marcus Terentius Varro) which is able to produce an electric discharge. Although the mechanism was unknown to Scribonius [6], nevertheless he used it for the treatment of headache (and other illnesses), revealing a pioneering and modern view of pain therapy, paving the way, without him knowing it, to the concept of electrotherapy. Some features of the torpedo were present within the Hippocratic Corpus, in passages taken from Plato (Meno, 80A 5), Aristotle (Historia Animalium, IX, 620 B) and Theophrastus (Fragment, 178).

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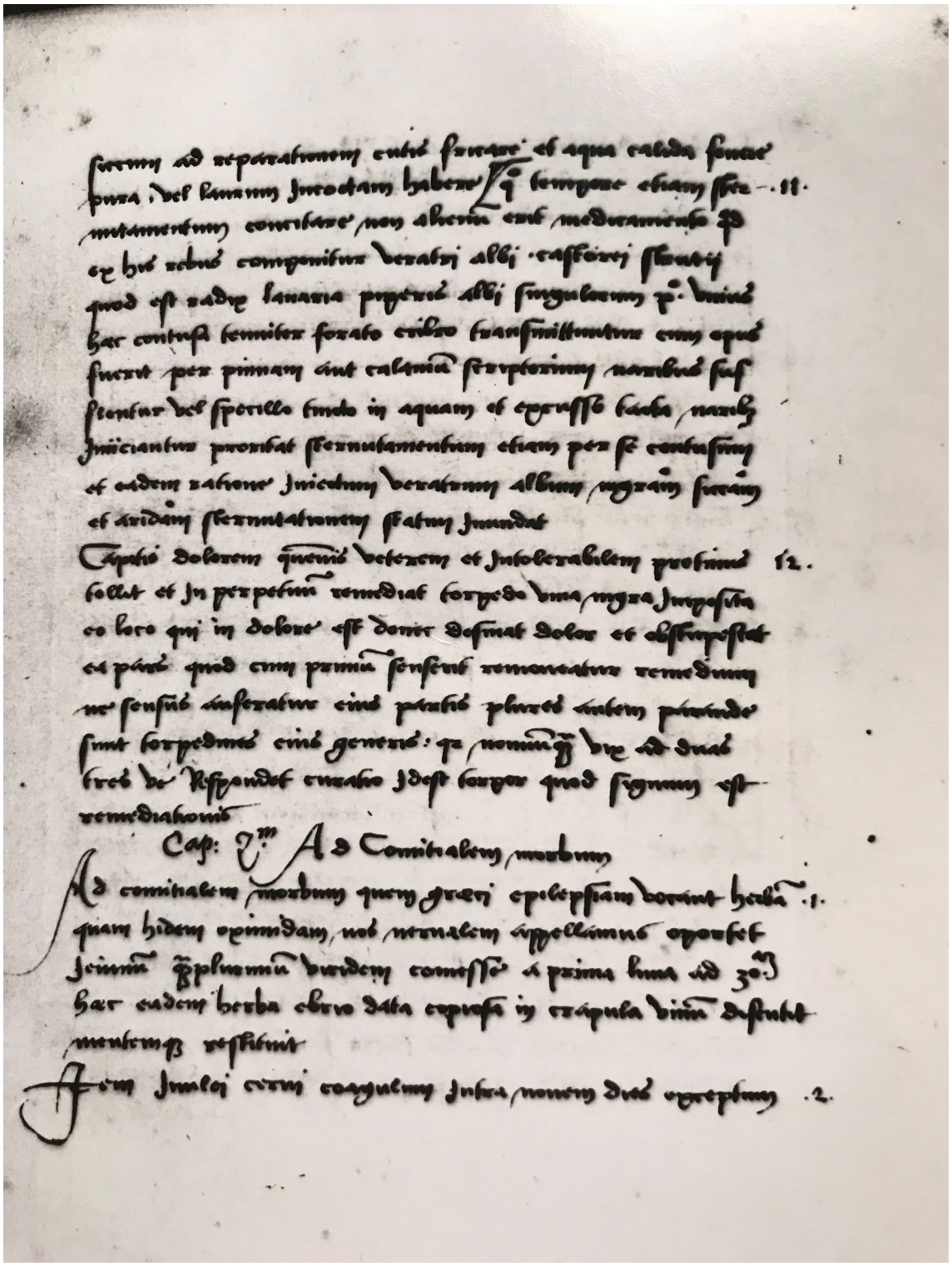

Fig. 1 Page of the *Compositiones* (Toletan, Chapt. 98.12; 16th cen. s. 13r), reporting chapter XI

Later, in the Classical and Late antiquity periods, the torpedo continued to be used. Pliny the Elder mentions it (Nat. Hist. IX, 143) and its use in medicine (XXXII) [7]. Even Dioscorides recommended the use of the torpedo for headaches (De materia medica, II 15 Wellmann); likewise Plutarch (De sollertia animalium 278B), Galen (De Puero Epileptico V), who also suggested the use of the torpedo as a possible remedy for epilepsy, and Paulus Aegineta (Epitome

medica VII, 3) [6–8]. Only subsequent studies would explain the physiological origin of torpedo's electric shocks.

In the *Compositiones* Scribonius states:

XI. Rapidly removes and cures headaches at once and for good, as chronic and unbearable as they may be. A live black torpedo is applied to the aching part, until the pain stops and the aching part starts becoming numb. However, as soon as the patient feels this sensation, the remedy has to be removed to avoid total numbness of the affected part. Furthermore, please have several similar torpedos in readiness since for the cure, i.e., the numbness to work, which in itself is a sign of improvement, it sometimes takes more than two or three applications (Fig. 1).

See also *Comp.* CLXII for a similar treatment of gout pain to the freedman Anteros [5].

In addition, for patients with scotoma and dizziness or headache, Scribonius recommends an *antidotos hiera* (sacred antidote) acquired from Paccius Antiochus, in which the flesh of the torpedo is sometimes used for the preparation of an infusion: XCIX. Likewise, it heals people who are suddenly experiencing dimness of the sight with some kind of dizziness—the Greeks would define these patients "scotomatous"—and those suffering of chronic headaches, also known as "cephalalgia" […] Then, it is necessary to administer this laxative to the patients […] barley infusion, soft vegetables, prepared with stinging nettle, rumex, and mallow, sometimes also adding a torpedo, together with a little bread and water as a drink [5].

In the *Epistula dedicatoria*, Scribonius highlights two important aspects of his medicine; first, his fervent defence of medicaments, as stated by Celsus, but disputed by a new stream of physicians, leading to Dietetics; second, his specific attention to *humanitas* and *misericordia* in medical ethics and in relations with patients [9]. Even Scribonius' approach to neurological disorders, such as epilepsy (*morbus comitialis*)—at that time often considered of supernatural origin, leading to *comitia* postponement, patient exclusion and condemnation—is in line with his rational and ethical vision.

Scribonius wrote with elegance and verve, introducing new terms, adopting uncommon words and syntactic structures [10].

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