Review Article

The Birth and Growth of Neuroradiology in the USA*

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Summary. Neuroradiology in the USA was started by the neurosurgeons Harvey Cushing, who personally made the first X-rays used to treat a patient with a neurological disability, and Walter Dandy, who first performed air ventriculography, ventriculoscopy, air encephalography and air myelography. The father of neuroradiology in the USA was Merrill Sosman, Cushing’s associate. Modern neuroradiology was introduced into the USA from Europe by Mannie Schechter who was one of the original team of three Chief Editors of Neuroradiology.

Key words: History, neuroradiology USA – Cushing H – Dandy WE – Schechter MM – Sosman MC – Taveras JM

The newly published American Journal of Neuroradiology (AJNR) was introduced with an editorial [93] which might well be amplified with additional details of this fascinating story before our memory becomes so dim that important historical facts fade into oblivion.

Roentgen submitted his paper about a new kind of rays, which he called X-rays, on 28 December 1895 for publication in a not very important local journal [75] in which it appeared almost immediately. Thus he gained priority over Philip Lenard, whose work on cathode rays was well known to Roentgen.

Harvey Cushing (1869–1939) (Fig. 1) was a house pupil at the Massachusetts General Hospital (MGH) in Boston at that time. On 15 February 1886, within 6 weeks of Roentgen’s report, Cushing wrote to his mother: “Every one is very excited over the new photographic discovery. Professor Roentgen may have discovered something with his cathode rays that may revolutionize medical diagnosis” [48]. He wrote again to his mother on 10 May 1896: “We have at last succeeded in having an X-ray machine put in for which I have subscribed largely and hope the conservative staff will ultimately remunerate us for it” [48]. This was apparently not done.

It has been rumored that Cushing took the tube with him, “somewhat to the consternation of the staff” (MGH) [95] when he moved to Baltimore to

* To commemorate the 50th anniversary of the founding of the Harvey Cushing Society (now called the American Association of Neurological Surgeons), and the completion of 10 years of publication of Neuroradiology
the Johns Hopkins Hospital (JHH) in October 1896. At any rate, on 6 November 1896, a patient with a Brown-Sequard syndrome, which developed after being shot in the neck, came under Cushing’s care, and he lost no time in making use of the tube which he had brought with him from Boston [17, 18].

The details of the X-ray examination (Fig. 2), the first made in Baltimore, were related in 1925 by Cushing at the 25th Annual Meeting of the American Roentgen Ray Society [24]: “It was in the fall of 1896 that I went to Johns Hopkins and made the first roentgenograms that were taken there, with the aid of a decrepit and perverse static machine as big as a hurdy-gurdy and operated in the same way, by turning a crank. My first paper submitted for publication contained an account of a case of a gunshot wound of the spine with plates showing a bullet which a Baltimorean had planted in the body of his wife’s sixth cervical vertebra. I once showed these pictures to Dr. Cole and he expressed himself as astonished that such good plates could have been taken in 1896; but I do not know whether I told him, as I shall now confide to you, that the plates were the result of exposures averaging 35 minutes. And I may add that the pictures which were reproduced were not those of a single experience, for I think the patient was given as many as half a dozen sessions at least, before plates were secured which were sufficiently good for reproduction. Needless to say, she was a most cooperative patient. Subsequently a Willyoung coil was purchased which I think had a spark gap of 2 or 3 inches. With this coil and many bottles of rodinol (I do not know if rodinol is anything more than a memory for a few grey beards in this audience), I spent many weary hours for the next year or two in an improvised dark room off from the old amphitheatre at the Johns Hopkins Hospital developing roentgen-ray plates in which no one at the time took any very great interest. Certainly no one of us could have had any possible conception of the increasingly important role the roentgen-ray was to play in clinical diagnosis and treatment.”

As was the case in Europe, so also in the USA, the earliest use of X-rays in relation to the nervous system was for the location of missiles and fractures [17, 47, 53, 76]. It did not take long for radiology to become a specialty; soon there were radiologists who were ready to help colleagues who treated disorders of the nervous system. This happened rather naturally in the thriving neurological climate of Philadelphia where the neurologists Mills and Spiller, and the surgeons Deaver and Keen, relied on the radiological guidance of Pfahler and Sweet [53, 62, 63]. The latter devised an ingenious apparatus for the more accurate localization of foreign bodies in the brain [53].

The radiologist occasionally interpreted shadows which he had “seen” on X-rays of the skull as tumor [14, 62, 63], hematoma [76], and cerebral atrophy due to thrombosis [9]. It was pure coincidence that some of these lesions were found at operation or postmortem, thanks to the diagnostic ability of astute