ADVANCEMENTS in scientific fields occasionally are made by two or more investigators working independently, each unaware of the other’s efforts. An example of this in the field of neurological surgery is found in the simultaneous introduction of posterior rhizotomy for pain by William H. Bennett and Robert Abbe in 1888–1889.

During the early development of modern neurosurgery, operations for the treatment of neurological diseases were usually devised by neurologists, who then directed general surgeons in their performance. In the case of posterior rhizotomy, Dr. Charles Dana, occupant of the first chair of neurology at the Cornell University Medical College, suggested that certain types of pain might be controlled by division of the posterior spinal roots, and this operation was performed a short time later by Bennett in England and Abbe in the United States.

Mr. Bennett (later Sir Bennett), surgeon to St. George’s Hospital in London, admitted a 45-year-old man to his service on August 29, 1888 for treatment of syphilitic osteitis of the left tibia. Various procedures, including amputation at the knee, failed to control the patient’s pain, so on December 24, 1888, Bennett sectioned the first, third, fourth, and fifth lumbar and the first and second sacral posterior nerve roots on the left side. The patient was relieved of pain, but died of an intracranial hemorrhage on January 5, 1889.

Within two weeks of Bennett’s operation, Dr. Abbe, a pioneer in the surgical treatment of trigeminal neuralgia, spinal tumors, and syringomyelia, performed a similar operation. His patient, a 44-year-old man, was referred to him by Dana because of neuralgia of the right brachial plexus, which had been treated unsuccessfully by stretching of the posterior interosseous and ulnar nerves, amputation of the upper extremity, and excision of a neuroma of the musculo-spiral nerve. On December 31, 1888, Abbe sectioned the sixth and seventh cervical nerves extradurally on the right, and two days later he divided the seventh and eighth posterior nerve roots on the same side. At the same operations, Abbe also stimulated the exposed spinal nerves with faradic current to determine for the first time in a living human being the motor functions of these nerves.

Following the reports by Abbe and Bennett, posterior rhizotomies were performed by a number of surgeons for the relief of peripheral pain. Mingazzini suggested in 1899 that this operation should also be performed for the relief of the lightening pains of tabes dorsalis, and a decade later, at Foerster’s request, Küttner successfully relieved the symptoms of a 47-year-old man suffering from gastric crises by dividing the seventh to tenth thoracic posterior nerve roots.

Aside from adapting posterior rhizotomy to gastric crises and spastic paralysis, Foerster made a far more significant contribution in this area. From his extensive experience with the operation during the following quarter of a century, he was able to carefully plot the dermatomes in man.

Although posterior rhizotomy for pain aroused widespread interest after its introduction, the operation gradually lost favor because of its inherent disadvantages. Because of the wide overlapping of sensory nerves, extensive laminectomies were required to achieve satisfactory relief of pain, and this led to a relatively high mortality rate in the patients debilitated by painful disease. In addition, the patients who survived the operation were found to be definitely handicapped by the loss of all forms of sensation in the involved area.

With the introduction of cordotomy, higher spinothalamic tractotomy, mesencephalotomy, frontal leucotomy, etc., the operation of posterior rhizotomy lost most of its original importance, but it
still has historical significance as a major step in the development of modern techniques for the relief of pain.

References

6. Bennett, W. H. A case in which acute spasmodic pain in the left lower extremity was completely relieved by sub-dural division of the posterior roots of certain spinal nerves, all other treatment having proved useless. Death from sudden collapse and cerebral hemorrhage on the twelfth day after the operation, at the commencement of apparent convalescence. Med.-chir. Trans., 1889, 72: 329–338.

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DEATH FROM SUDDEN COLLAPSE AND CEREBRAL HAEMORRHAGE ON THE TWELFTH DAY AFTER THE OPERATION, AT THE COMMENCEMENT OF APPARENT CONVALESCENCE.*

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The following case is thought worthy of record, partly on account of its interest in relation to the