GILBERTO ROSSI

(1877-1960)

Professor GILBERTO ROSSI died on 20 March 1960, at the age of 83.

Born in Città di Castello (Umbria) on 7 January 1877, Gilberto Rossi received his medical degree from the University of Florence in 1901. Giulio Fano, one of Luciani's early pupils, was then professor of Physiol-

ogy at the University. First studying as an undergraduate in the Department of Anatomy, Gilberto Rossi later became an associate of professor Fano, thus starting his scientific career in the same Institute of Physiology on via Gino Capponi, where Luciani had in the eighties performed his experiments on the cerebellum. Except for a short period at the University of Perugia, Gilberto Rossi spent his life in Florence, where for 30 years (1918-1948) he held the chair of Physiology.

There is little doubt that Rossi's renown in the field of physiology is a result of his work on the central nervous system. It is surprising to note that he became a neurophysiologist rather late, as his first ten years after graduation were devoted to the study of biochemistry, of physical chemistry and to the physiology of the gastro-intestinal system.

It was only in 1912 that his famous work on the cerebello-cerebral relationship appeared. The discovery that cerebellar stimulation has a facilitatory influence on the cortically induced movements, confirmed by later investigators, prompted the electrophysiological experiments of Walker (1938), of Canestrari, Crepax and Machne (1955) and others. Rossi (1913) showed also that the cerebellum has a tonic facilitating influence on the motor cortex: a fundamental observation explaining Luciani's asthenia, and possibly the cerebellar tremor, which is completely abolished by the destruction of the motor cortex, as it was revealed later by Fulton, Liddel and Rioch (1932) and by Aring and Fulton (1936).

Luciani immediately grasped the great significance of these experiments and reported in detail, and with much praise, the results obtained by Rossi in the fourth edition of his Handbook. At the same time an English translation of Luciani's treatise was being edited by M. Camis first and later by Gordon Holmes, a fortunate coincidence that greatly contributed to publicizing the discovery of the Italian physiologist. The work was quoted in almost every monograph or handbook dealing with cerebellar physiology, and was regarded by Bremer (1935) as the main physiological evidence in support of his hypothesis on the nature of the neocerebellar function.

The experiments performed by Rossi on the semicircular canals are less known abroad, possibly because they were published just at the outbreak of the First World War (1914, 1915). Rossi was the first to demonstrate the dynamic theory of Mach, Breuer and Crum Brown, with experiments performed on the semicircular canals of the selachians. Several years later (1921) Maier and Lion, unaware of Rossi's finding, confirmed that angular acceleration produced a flow of endolymph in the semicircular canals of the pigeon. The labyrinthine apparatus remained for a quarter of a century the preferred field of investigation of the School of Florence. In 1943 Rossi published an excellent survey of his own work as well as that of his pupils Simonelli and Di Giorgio on the physiology of the vestibular system.

Rossi entered a third and highly productive field of investigation in 1921, when he published the first paper in a series of works devoted to the postural and phasic asymmetries elicited by unilateral cerebellar ablations. To summarize the results obtained by Rossi, Simonelli and

Di Giorgio through the approach of the asymmetrical cerebellar innervation would be tantamount to writing a major chapter of cerebellar physiology. The great significance of these findings was stressed in the monographs of van Rijnberk (1931) and Bremer (1935).

The discovery of the centrifugal innervation of the muscle spindles and the understanding of the functional significance of the gamma innervation is undoubtedly one of the major achievements of contemporary neurophysiology. Gilberto Rossi did not contribute any experiment to this discovery, and one cannot even say he prompted these works, as the experimenters in this instance were unawere of the hypothesis that the Italian physiologist had stated in a paper on the cerebellum published in 1927. This hypothesis was actually a prediction that was fully verified a quarter of a century later. One cannot read Rossi's article without being struck by the intellectual vigour and the insight of the author. To quote Granit in his Silliman's lectures (p. 269): « It is interesting to note that insofar as tonic firing is concerned, Rossi (1927) deduced an essentially correct picture of the role of spindle innervation. He thought of tonic firing for muscle spindles at various lengths of the muscle as a fixation of the intrafusal fibers at appropriate lengths by specific motor fibers to them. Thus, he said, it would become possible for the higher centers to be at rest while charging lower centers with the duty of keeping up a suitable amount of spindle or intrafusal contraction to maintain postural tonus ».

Gilberto Rossi retired at the age of 71 and devoted the last twelve years of his life to literature. At the age of 75 he published a book, *Mezzo Contadino*, which ranked him at once among the prominent writers of Italy. The critics received this work enthusiastically and admired the poetic inspiration and the author's mastery of the Italian language. They were surprised when informed that *Mezzo Contadino* had been written by a scientist, one of the oldest members of the Accademia dei Lincei. A kind of poetic autobiography, the little book dealt only with the years of youth, and Rossi did not mention his life as a physiologist and a teacher. In the last years he also wrote essays and fairy tales.

Those who were fortunate to know Gilberto Rossi well were charmed by his personality. A man of high caliber, he was different from other famous experimental scientists of his day. The impression of high moral character evoked in Rossi's younger colleagues an understandable feeling of reverence. He was a modest man, not unaware of his own worth but indifferent to position and honors. Rossi possessed a deep respect for liberty and the individuality of others, and his goodness and indulgence toward his neighboor never became ingenuous because of his lighthearted sense of humour. Although Rossi died recently, we can try at this time to evaluate his work and personality.

While not Luciani's pupil, Rossi is considered the man who most closely continued his work. His neurophysiological research was done with very simple technical means such as were at the disposal of physiologists at the end of the 19th century. Nevertheless if these experiments were repeated today, perhaps using more refined electronic equip-

ment, the results would not be any clearer or more convincing than those Rossi obtained. So the vitality of his work was not tied to technical advances but rather to his understanding of physiology, his clarity of thought, his endowment with a strong creative capacity plus an ability to reduce problems to their essentials.

If Rossi's work has its roots in the end of the 19th century and often anticipates the conclusions of modern neurophysiologists, the literate and cultivated man leads us to recollects a still earlier time. Certainly it would be extremely difficult to recreate the atmosphere that existed in Florence during the first half of the last century around such men as Gino Capponi and Raffaello Lambruschini. But those who came in contact with Rossi in the last few years recalled the time when the intellectual life of Florence was closely tied to men of vast humanistic cultivation and high ethical standards.

Gilberto Rossi used to say, with a modest smile, that since he had made the effort to be a real physiologist all his life, he would not have wanted to be an " amateur " physiologist after his 70th year. He felt it important to prepare for retirement after a full and productive scientific life. Rossi gave however the impression, emphasized by the wonderful style of *Mezzo Contadino*, that for him literature was not a refuge for a tired spirit but rather the satisfying of an intellectual and creative inclination. And this impulse was no less strong than the one that led him to study the function of the central nervous system.

G. M.

BIBLIOGRAPHY

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