

MONUMENTAL MICROANATOMIST

■ This year is the 350th anniversary of the birth of Marcello Malpighi, whose discovery of the capillary network provided the missing link in Harvey's theory of the blood's circulation. The great Italian micro-anatomist, using low-power lenses, ingenious preparations, and his searching eyes, described the renal glomeruli, splenic corpuscles, and the skin's pigmented rete mucosum that all bear his name. He proved the gustatory function of the tongue's papillae, delineated the development of the chick embryo, and recognized that the liver's hexagonal lobules form a conglomerate gland.

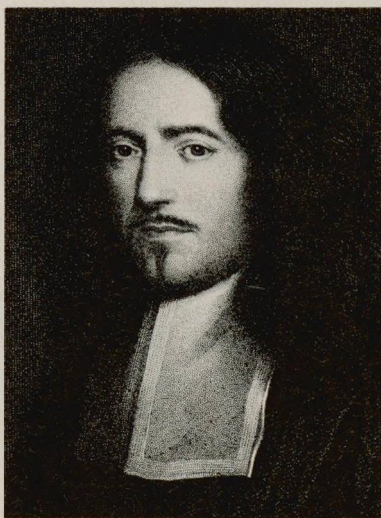
Before Malpighi in 1661 described the pulmonary air vesicles connected to bronchial filaments and surrounded by a network of tortuous capillaries, the lung was regarded as porous mass of tissue that sponged up and discharged blood. Initially, Malpighi investigated the structure of the frog's lung, not only because it was more easily visualized than the corresponding mammalian organ, but because he held that nature is accustomed "to undertake its great works only after a series of attempts at lower levels, and to outline in imperfect animals the plan of perfect animals."

Following this pre-Darwinian evolutionary theory, he shed light on the histology and function of many mammalian structures by examining their counterparts in lower species. The first to investigate the microanatomy of the brain, he accurately described the distribution of the gray matter, the extensions of the nerve cord's fiber tracts in the cerebrum and cerebellum of the swordfish, although he thought that the nerve fibers were tubules that carried "vital spirits" secreted by the gray matter.

An investigator of countless animal and plant species, Malpighi said of his laborious dissections of silkworms "there was a mental de-

light... in finding so many and puzzling miracles of nature."

Many of Malpighi's findings, reported in relatively brief "epistles," were published by the Royal Society of London, which elected him a member in 1669. Although he was vilified by some of his Ital-



Marcello Malpighi

ian contemporaries who fancied that his work was irrelevant to curing disease, Malpighi conducted a great deal of applied as well as basic research in the course of his medical practice. He performed autopsies, reported on heart polyps, lesions of the aorta and bone, the mechanism of secretion, and the coagulation of blood. He studied the uterus, its appendages, the ova and was the first to describe the corpora lutea. He also described tuberculosis of the lymph nodes and recognized glandular adenopathy more than 150 years before the disease was described by Thomas Hodgkin.

Bolognese Biologist. Malpighi was born March 10, 1628, in Crevalcore, a small town near Bologna where he attended the university from 1646 until 1649 when the death of his parents left him in charge of their large family and small estate. Returning to the uni-

versity in 1650, Marcello began to study medicine under Bartolommeo Masari.

After receiving his doctorate in medicine and philosophy in 1653, Malpighi taught logic at his alma mater for a brief period and in 1656 became professor of theoretical medicine at the University of Pisa. These with physicist-mathematician Giovanni Borelli he carried out dissections and experiments that gave rise to the Accademia Cimenti, but the two scientists' friendship later ended when they disagreed on a question regarding respiration.

Partly because of Pisa's damp climate, Malpighi returned to Bologna in 1659 as extraordinary lecturer but due to intrigues he left to hold the principal chair in medicine at the University of Messina from 1662 to 1666 when the University of Bologna appointed him to a professorship that he held for the next quarter of a century.

His marriage in 1667 to Francesca Masari, the 58-year-old sister of his former master, is said to have been felicitous, but Malpighi was harassed for many years by his neighbors, the Sbaraglias, who encroached on his estate and ridiculed his research. The feud led to the fatal stabbing of a Sbaraglia by Malpighi's brother Bartolommeo. In 1689, five years after the microanatomist's home in Bologna burned, his villa at Corticella was invaded by masked men who destroyed his records and instruments. Malpighi was convinced that the chief marauder was a Sbaraglia.

At the invitation of his old friend Pope Innocent XII, Malpighi moved to Rome in 1691 to be the pontiff's personal physician. A letter describing earthquakes was the scientist's last letter to the Royal Society before he died on November 28, 1694. An autopsy revealed an atrophic right kidney, a small bladder stone, hypertrophy of the left ventricle and a vascular accident.