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AS WE WERE...

Reflection on anaesthetists and epidemic diseases

In the 1850s, John Snow was the leading physician anaesthetist in London. He was also fascinated by cholera and had published a pamphlet – ‘On the mode of communication of cholera’ – in 1849, when about 53,000 deaths from the epidemic were registered for England and Wales. London’s next cholera epidemic began in September 1853 and reached a peak between late August and the first few days of September 1854, with more than 500 deaths in Golden Square, Soho.

The most popular water pump in Golden Square was at the corner of Broad and Cambridge Streets. On 3 September, John Snow (who lived close by) immediately suspected that this pump was the culprit. Over the next two days he investigated the water from the pump chemically and microscopically, and then decided that statistical methods were required. On 5 September he obtained a list of the names and addresses of those who had died of cholera in the districts of St James and St Anne’s, Soho and found that nearly all the deaths were clustered within 250 yards of the Broad Street pump. He requested an interview with the board of governors responsible for health in the parish of St James, and on 7 September he presented to them an account of his

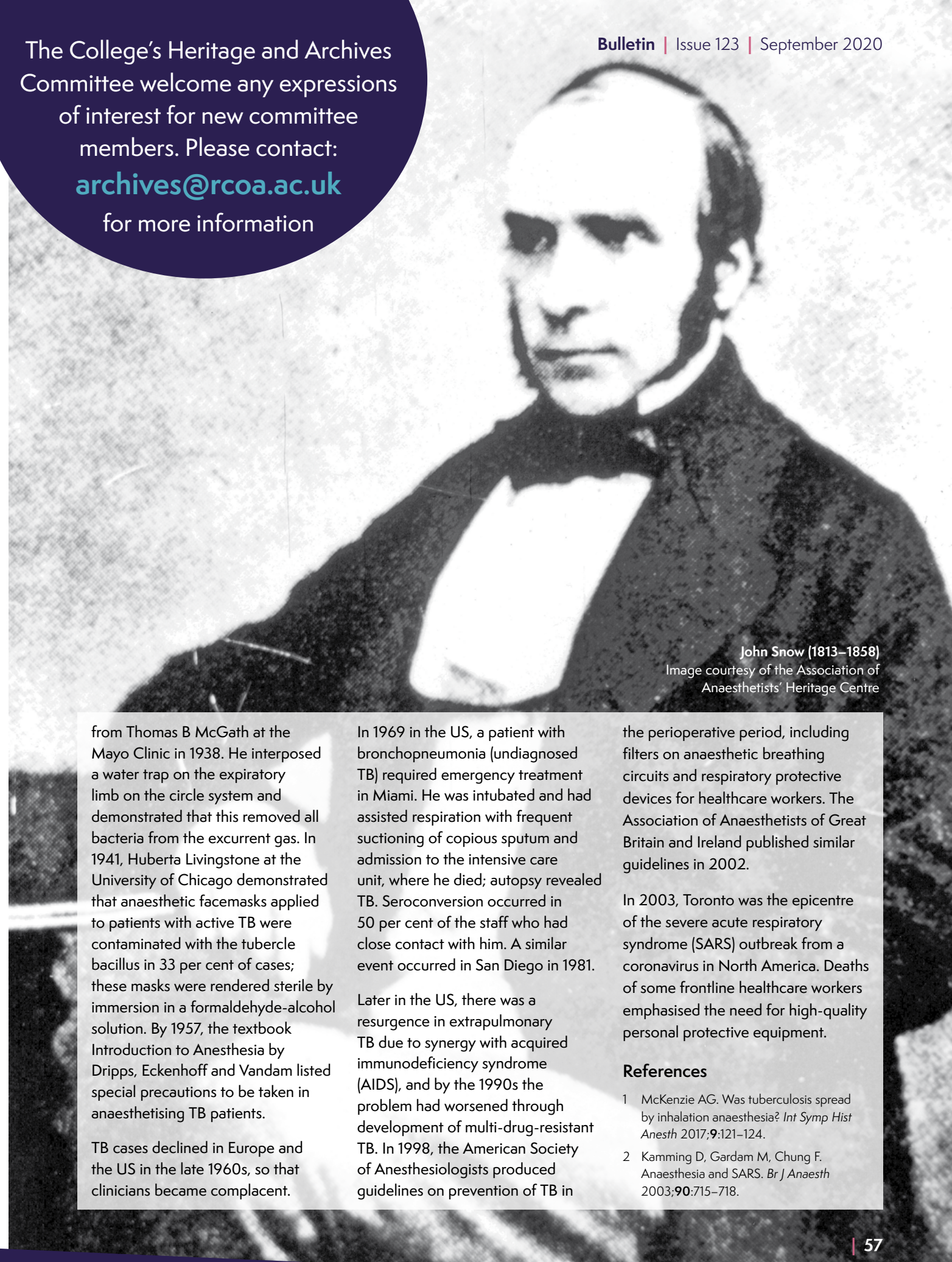
investigation. As a result, they ordered that the handle of the Broad Street pump be removed – this was done the following day. The cholera epidemic in Golden Square subsided. Further investigation revealed that the well supplying the pump was contaminated by a cesspool from a tenement in which a cholera patient lived.

Snow was far ahead of his time in believing that the causative agent of cholera was water-borne. The overwhelming majority thought that cholera was due to noxious vapours in the air – ‘miasmata’. However, Snow’s opposition to the ‘miasmata’ theory may have caused him to think there was little point in cleaning anaesthetic apparatus between patients – thereby inadvertently spreading

another epidemic of the 19th century: tuberculosis (TB). Rife in Victorian Britain, it was known as ‘phthisis’ or ‘consumption’, and Snow himself suffered from it. In 1873, Thomas Skinner of Liverpool was perhaps the lone voice to speak out against ‘inhaling through the same apparatus just used by a patient suffering from ...contagious (?) diseased conditions of the oral, nasopharyngeal, and pulmonary mucous membranes’. Even at the close of the 19th century, Robert Philip, an expert on the treatment of TB working in Edinburgh, published nothing about decontamination of anaesthetic facemasks.

In the 20th century a published precaution against spreading TB through anaesthetic apparatus came

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John Snow (1813–1858)
Image courtesy of the Association of Anaesthetists’ Heritage Centre

from Thomas B McGath at the Mayo Clinic in 1938. He interposed a water trap on the expiratory limb on the circle system and demonstrated that this removed all bacteria from the excurrent gas. In 1941, Huberta Livingstone at the University of Chicago demonstrated that anaesthetic facemasks applied to patients with active TB were contaminated with the tubercle bacillus in 33 per cent of cases; these masks were rendered sterile by immersion in a formaldehyde-alcohol solution. By 1957, the textbook *Introduction to Anesthesia* by Dripps, Eckenhoff and Vandam listed special precautions to be taken in anaesthetising TB patients.

TB cases declined in Europe and the US in the late 1960s, so that clinicians became complacent.

In 1969 in the US, a patient with bronchopneumonia (undiagnosed TB) required emergency treatment in Miami. He was intubated and had assisted respiration with frequent suctioning of copious sputum and admission to the intensive care unit, where he died; autopsy revealed TB. Seroconversion occurred in 50 per cent of the staff who had close contact with him. A similar event occurred in San Diego in 1981.

Later in the US, there was a resurgence in extrapulmonary TB due to synergy with acquired immunodeficiency syndrome (AIDS), and by the 1990s the problem had worsened through development of multi-drug-resistant TB. In 1998, the American Society of Anesthesiologists produced guidelines on prevention of TB in

the perioperative period, including filters on anaesthetic breathing circuits and respiratory protective devices for healthcare workers. The Association of Anaesthetists of Great Britain and Ireland published similar guidelines in 2002.

In 2003, Toronto was the epicentre of the severe acute respiratory syndrome (SARS) outbreak from a coronavirus in North America. Deaths of some frontline healthcare workers emphasised the need for high-quality personal protective equipment.

References

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