Anniversaries

Died 150 years ago

WILLIAM KEENE
GEOLOGIST, ENGINEER AND COLLECTOR, IN FRANCE AND NEW SOUTH WALES

Wolf Mayer (Australia)

"He devoted his energies more to the field than to that of the book ..."
Anon (1872)

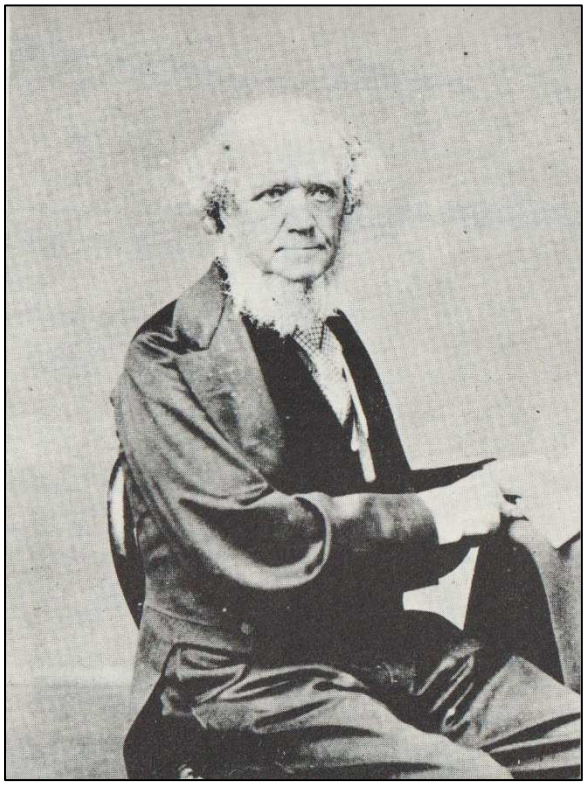

Fig. 1. Copy of a photo of William Keene. Original given to Prof. David Branagan by the late Mrs. Annette Keene-Holloway in 1972.

William Keene (Fig. 1) was already 54 years old when he left England with his family, in 1852, to settle in the colony of New South Wales. During the remaining 20 years of his life, and with the benefit of extensive experience gained in France, he made major contributions to the discovery, mapping and mining of coal deposits in the Hunter Valley region of New South Wales and took part in scientific debates. His amassing of a large collection and display of geological specimens, his performance as a public official, and his involvement in many charitable organisations earned him praise and great respect.

Born in Bath, Somerset, in 1798, the son of Thomas Keene and his wife Ann, young William moved to London with his sight set on a medical career.
However, he soon abandoned this pursuit when he discovered a much greater interest in geology and in engineering. While no firm evidence has yet come to light that he engaged in extended formal studies in his preferred subjects, he probably acquired a basic knowledge in these fields during his stay in London. In 1821 he assisted the surgeon and inventor Goldsworthy Gurney in presenting science lectures at the Surrey Institution (Branagan & Vallance, 1974).

We next meet Keene in Paris in 1822, where he married Sarah Evans (1804-1867) in the chapel of the British Embassy. Little is known of his whereabouts during the following five years. The birth of one of his children in France and of another in England during this period (Keene-Holloway, 1982), suggests that he resided for a time in each of these two countries.

He may also have continued his studies in geology and engineering, but without gaining a formal qualification.

In 1827, the French government appointed him to a position as superintendent of coal and salt mining operations in the region known as the *Pyrénées Atlantique*. His work there would have considerably increased his geological knowledge of sedimentary rock formations, their stratigraphic succession and of mining practices.

During that time, he lived with his family in the Bayonne district at the foot of the Pyrenees, where he also cultivated vines and acquired considerable expertise in viticulture. A career change from mining to civil engineering, led to his move to Bordeaux in 1838. The instability brought about by the revolution in France in 1848, prompted him to return to England. His great granddaughter believed that he was given a plot of land by the French government as a reward for discovering new salt deposits (Keene-Holloway, 1982). Keene's work in France was further recognised with the award of an Order of Merit.

For the next four years, after his return to England, Keene again eludes the historian. It is likely that he found employment as a geologist or engineer, probably not far from his hometown of Bath, in the coal mining districts of Wales. He may also have taken an active interest in *Keene's Bath Journal*, a local newspaper owned and published by his family.

The arrival of Keene in New South Wales, bringing with him his practical knowledge of geology and mining, would have been welcomed by the colonial government, who soon engaged him to carry out a survey and evaluation of iron deposits at Mittagong, to the south of Sydney. The cross sections he prepared have survived in the records, but his report, along with many others, cannot be found.

Keene would soon find himself in more familiar geological territory when he was assigned to work on the coal measure sequence in the Hunter Valley in northern New South Wales. In 1854 he was appointed Examiner of Coal Fields and Mines, to which, in 1865, were added the duties of Keeper of Mining Records. From 1859 he also performed the functions of Government Geologist (Campbell, 1873). In these roles, Keene worked tirelessly and meticulously to map and record the coal-bearing strata of the Newcastle coal measure and oil shale deposits, and to oversee the mining operations in this part of the colony. He also discovered new commercially viable deposits of bituminous coal. Keene's talent as a sketch artist is shown in his tracing of the strata of part of the Newcastle coal measures (Fig. 2), from the coast for some 50 miles (80 km) inland. Following a visit to coal-bearing sequences in Queensland he wrote:

> "I have examined seams more than 700 miles to the north of Newcastle, belonging to the same deposits as we are working on the Hunter, covered and underlaid by the same fossil flora and fauna; and we may, without boasting, claim to rank with the most extensive coalfields in the world".

And added:

> "… I have long considered, and often expressed the opinion, that good clean, handpicked, New South Wales coal, is at least equal if not preferable to the best coals of England" (Keene, 1870).

Keene supported the Rev, W. B. Clarke, then the acknowledged authority on the geology of the colony, in a long running dispute about the age of the Newcastle coal measures. Both believed them to be of Palaeozoic age (Clarke, 1867; Keene, 1870), contrary to the views of the English palaeontologist Frederick McCoy (McCoy, 1861), who had assigned them to the Mesozoic. Most of the coal measure strata in the Hunter Valley are now known to be of Permian age.

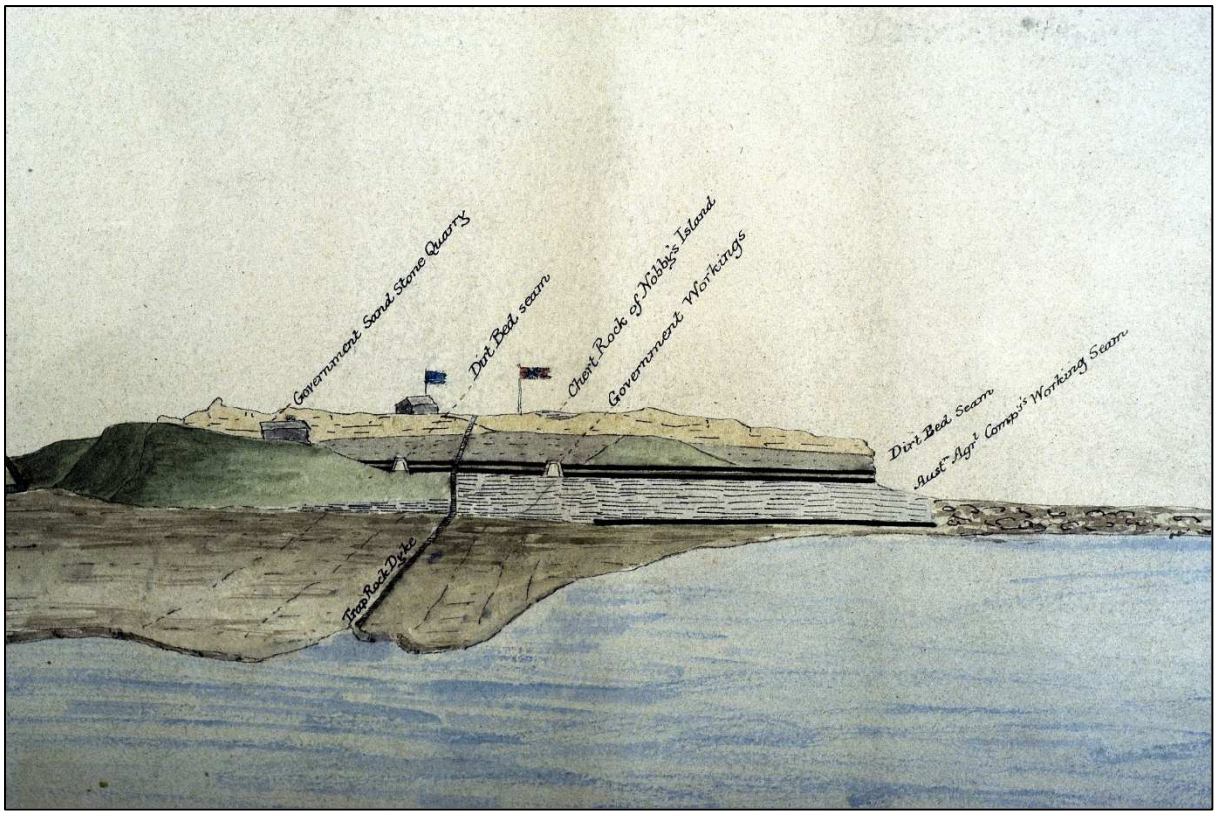

Fig. 2. Part of a continuous east west line of sketches, from the coast at Newcastle along the Hunter Valley to Bulga Mountain, showing outcrops of the Newcastle coal measures at Flagstaff Hill, by William Keene (1854): Courtesy of Newcastle University Cultural Collection.

The three short articles which Keene published in learned journals, dealt, respectively, with the coal measures of New South Wales; with oil shale deposits in the Hunter Valley; and, in a posthumous contribution, with the stabilisation of sand dunes (Keene, 1865,1866, 1873). His wider interest in the colony's geology led him to enter all then identified rock units onto the map of New South Wales, produced by the surveyor-general Sir Thomas Mitchell in 1834. With Keene's additions, this is now generally considered to be the first geological map of the colony (Fig. 3).

William Keene was a passionate collector of geological specimens. He had started collecting fossils while working in the Pyrenees and enlarged his collection with many samples of rocks, minerals and fossils from various parts of Australia, but particularly with specimens from the areas where he had conducted his own fieldwork. A room at the military barracks in Newcastle was fitted out to house his collection which was open to the public and was visited by many scientists and other notables. The specimens on display must have come from a wide range of geological settings as, according to one of the local newspapers, they greatly assisted "the student in geology in acquiring an accurate comprehension of the composition of the earth's crust" (Anon, 1859). Keene contributed to and organised collections of geological specimens for several exhibitions, including those held in Sydney in 1861, London in 1862, Melbourne in 1866 and Paris in 1867. Hopes were expressed at the time that, following Keene's death, his valuable collection would be donated to the Australian Museum in Sydney, but this does not appear to have been the case and no trace of it has been found.

When, in November 1863, the news reached the colony that a human jawbone had been discovered in a quarry in northern France, it sparked a lively debate in the letter pages of the *Sydney Morning Herald*, to which Keene contributed (Keene, 1863). The discoverers of the bone believed that their find provided proof that the human race was of greater antiquity than

previously thought. Keene, a firm believer in the biblical text and in the passage of some 6,000 years since the Creation, strongly disputed this view. In his letter to the editor Keene also rejected the theory of Charles Lyell "of uniform action in the production of physical features of the globe", arguing that their formation could not be accounted for "in any other way than by a rate of change far more active". His observations in the Pyrenees had convinced him "that this great upheaval was within the human epoch, for the evidence of violent rupture and elevation are so fresh and palpable that they seem to be, as it were, of yesterday".

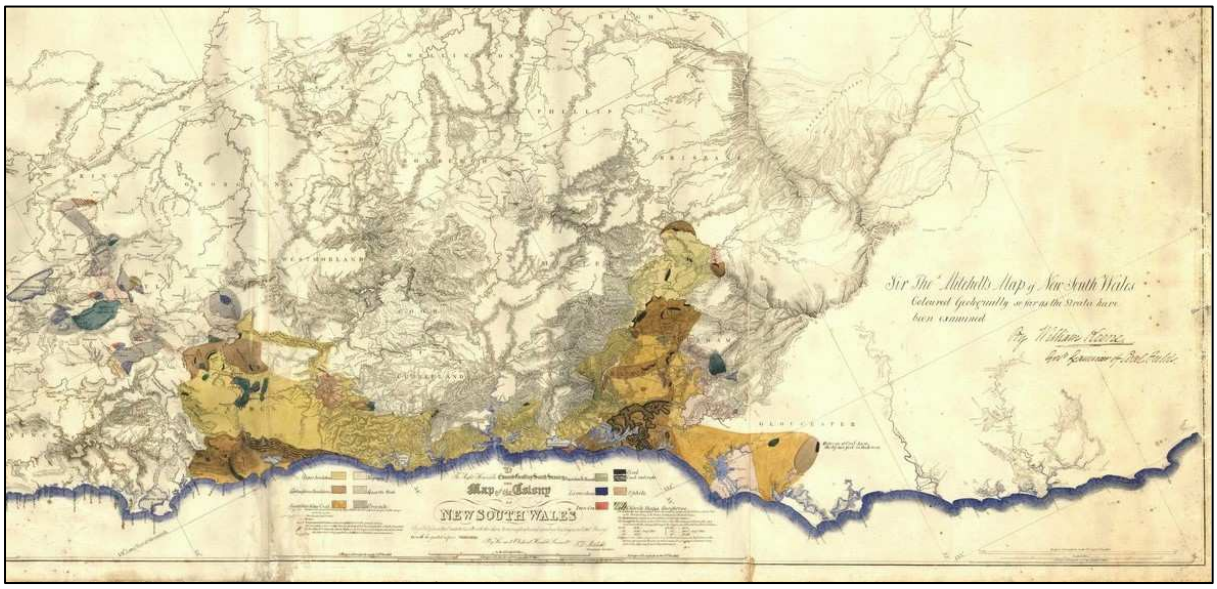

Fig. 3. Part of the map of New South Wales by Sir Thomas Mitchell (1834), with the geology added by William Keene. Courtesy of the Geological Survey of New South Wales.
Please note that Port Jackson (Sydney) is located directly above the 'N' in 'NEW'…; outcrops of the Newcastle coal measures in the Hunter Valley are seen on the right side of the map. The upper right corner of the map points to the north.

Keene's abilities and limitations as a geologist are best described in an obituary by an unknown writer:

> "Compared with other eminent geologists [in Australia], he was surpassed by some in the philosophy of the science: but the remarkable accuracy of his memory, conjoined with his laborious habits of investigation, enabled him to meet the requirements of his position, in a way highly satisfactory to those whose interests were concerned in his scientific conclusions. He devoted his energies more to the field than to that of the book; but read sufficiently to acquaint himself with the labours of other geologists." (Anon, 1872)

With his expertise in civil engineering, Keene contributed to the works on a new water supply for the city of Newcastle. He also gave advice on the stabilisation of sand dunes by the planting of select species of grasses.
He was elected a Fellow of the Geological Society and the genus of a gastropod, *Keeneia*, has been named in his honour.

Keene is remembered for introducing the French style of vine growing and the management of wine in the cellar, based on practices used in the southwest of France, which has a similar climate to that of the Hunter Valley. He advocated the replacement of the German method then in general use, deriving from practices in the valley of the Rhine, with its much colder climate (Mikaël, 2020).

In memory of his many contributions to his local church, to public institutions and charitable organisation, a three-piece plate glass window was installed in the Church of St John, in his Australian hometown of Raymond Terrace, with the inscription: “To the Glory of God, and in memory of William Keene”.
Obituaries in local newspapers described him as: “universally esteemed and respected” … a “genial, cordial, and polite gentleman” (Anon, 1872).

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