TWO GEOLOGICAL CENTENARIES

G. B. GREENOUGH, F.R.S. (1778–1855), and SIR HENRY DE LA BECHE, F.R.S. (1796–1855)

By V. A. EYLES and J. M. EYLES

IN April 1855 the geological world suffered the loss of two of its best-known figures, George Bellas Greenough and Henry Thomas de la Beche. One of them, Greenough, was a founder and first president of the Geological Society of London, doyen of the many geological societies established since; while to de la Beche we owe the establishment of the Geological Survey of Great Britain, a pioneer among such bodies.

At the opening of the nineteenth century, geology was a new science, completely unorganized, and in Britain the number of its devotees, nearly all amateurs, was comparatively small. Within the life-time of Greenough and de la Beche the position so changed that the science attained complete independence, with its own professional societies; and furthermore, its importance to the country obtained official recognition. This state of affairs was the result in no small measure of the efforts of these two men.

G. B. Greenough, originally George Bellas, had assumed the surname of Greenough while still a youth, on inheriting a considerable fortune from his maternal grandfather. He was educated at Eton and Pembroke College, Cambridge, and later studied law at Göttingen. Here, however, the lectures of the anthropologist, J. F. Blumenbach, seem to have implanted in him the taste for science, and for geology in particular, which largely determined the future course of his long life. From Göttingen he went to Freiberg to study under the eminent geologist, A. G. Werner, whose views he adopted and advocated for many years. After further travel he returned to Britain in 1801. Then for some years he took part in the activities of the newly formed Royal Institution, meeting Humphry Davy, with whom he visited Ireland in 1806. In 1807 Greenough was elected to Parliament as member for one of the pocket boroughs, that of Gatton, Surrey. Although he took his political duties seriously, after 1812 he seems not to have taken any further public part in politics.

While political activity was but a passing phase in his life, his interest in geology continued to grow. In 1807, a few months after being elected a Fellow of the Royal Society, Greenough joined with a dozen other enthusiasts to form what one of them called "a little talking Geological Dinner Club", becoming its treasurer and chairman (or president). This club was established by 1811 as a regular geological society, with Greenough as first president, and it began to issue *Transactions*. In 1825 the society was formally incorporated by Royal Charter as the Geological Society of London, which now has more than two thousand members.

The new Society had not escaped teething troubles, for during the first few years of its existence it met with serious opposition from the Royal Society, which, jealous of its own authority in the field of scientific inquiry, endeavoured to suppress the newcomer. It seems to have been due principally to the resistance of Greenough that the senior Society, in the person of its president, Sir Joseph Banks, and other prominent Fellows, was unsuccessful in its efforts.

Within a year or so of its formation, the new Geological Society set up a committee to encourage

the production of geological maps, then very much a novelty. On November 6, 1812, Greenough presented to the Society "Nine Maps of England with the principal Strata sketched in", and as a result was specifically requested to construct a geological map of England upon a large scale. He set about the task methodically, combining the results of his own field-work with that of other geologists. The resulting work, on a scale of 11 miles to the inch, was published by the Geological Society in 1820. Though now almost forgotten, it was for its time a work of great merit, superior in accuracy to the great pioneer map of William Smith, published in 1815. It went into a second edition in 1840 and a third in 1865.

Greenough continued for the rest of his life to serve the Geological Society in one way or another, either as a member of council or as president, an office to which he was re-elected in 1818 and again in 1833. He made no contribution to the publications of the Society other than his presidential addresses, but frequently took part in the debates which followed the delivery of papers, generally adopting a somewhat conservative and critical attitude when new ideas were discussed. His contributions to the literature of geology were, in fact, remarkably few, in view of his long association with the science, though in 1819 he published a series of essays entitled "A Critical Examination of the First Principles of Geology". These are now of historical interest only; but they afford a well-documented record of views held and arguments used in the geological discussions of the period.

Greenough also spent many years in compiling a large geological map of India, the first of its kind, which he exhibited to members of the British Association at Liverpool, in 1854. Incidentally, it is worth recalling that he was present at the first meeting of the Association, at York in 1831.

Closely allied to Greenough's predilection for geology was his interest in geography; when the Geographical Society was founded in 1830, he served on its first council, and was elected president in 1839. The science of ethnology, too, claimed some of his interest and attention.

About 1822 Greenough commissioned a young architect, Decimus Burton (later one of his executors), to build him a house in Regent's Park, London. Known as Grove House, it was deemed sufficiently noteworthy at the time to be illustrated in contemporary publications. A coloured view of "The Seat of G. B. Greenough Esq." appeared in R. Ackermann's "Repository of the Arts etc." in 1828. The house still stands at the north end of Park Road, beyond Hanover Gate. In 1953 it was acquired by the Nuffield Foundation, who have, regrettably, renamed it Nuffield Lodge. Here Greenough entertained his friends and fellow scientists at dinner parties and soirées, during which scientific matters were the main topic of conversation. Here, too, he housed his extensive collection of books and maps, which on his death passed to the Geological and Geographical Societies. His collection of rocks and fossils went to University College, London, with the foundation of which he is said to have been closely connected. His name is still

commemorated there by the Greenough Club, in the Department of Geology.

Greenough is said to have been of pleasant but shy and modest disposition. He was a distinguished representative of a type seldom met with to-day—an amateur, in the true sense of the word, well versed in science, who had the means and inclination to make science his career. Although Greenough made no great contributions to scientific knowledge, it is quite clear that by his own labours, and by his encouragement of others, with financial assistance or otherwise, and by his long service on the councils and as president of scientific societies, he contributed much to the advancement of science as a whole. His singleness of purpose persisted to the end of his life. It is best illustrated by the fact that at the age of seventy-six, after taking the precaution of making his will, he set out for Italy and the East, bent on further geological and geographical researches. Illness prevented him travelling beyond Naples, where he died on April 2, 1855.

Henry Thomas de la Beche became a member of the Geological Society in 1817, when he was twenty-one, shortly before Greenough assumed his second presidency. His early years had been spent at Charmouth and Lyme Regis, in a district then becoming famous for its fossil remains, and this may have led to his early interest in geology. At all events, in 1819 he read a paper on the geology of the coast between Bridport and Babbacombe Bay to the Geological Society. In the same year he became a Fellow of the Royal Society. He travelled widely on the Continent as well as in England and Wales to increase his knowledge of geology. In 1824 he visited family estates in Jamaica and on his return described the geology of the island to the Geological Society.

De la Beche made numerous valuable contributions to geological literature; but, in retrospect, the most significant task he undertook was when about 1830 he began to colour geologically some of the new one inch to the mile maps of the Ordnance Trigonometrical Survey. The importance of this work was appreciated, and in 1832 he received a grant from the Treasury to enable him to continue it. In 1835 he was appointed on a salaried basis to continue his geological mapping, and this year is accepted as that of the foundation of the Geological Survey of Great Britain. The story of the early years of the Survey has been told more than once, and it is clear that De la Beche was particularly well fitted to be the first director of this new national scientific service. He was not only a distinguished geologist, but also proved himself an able administrator, possessing to a marked degree the qualities of tact, firmness and an understanding of the official mind so necessary to one in his position. Some years ago, Dr. F. J. North published extracts from De la Beche's correspondence and note-books¹, which gave clear evidence of this ability. Other letters of De la Beche (so far unpublished) are preserved among the correspondence of Sir Robert Peel now in the British Museum. From these letters it is evident that the Director of the new Geological Survey had no hesitation in by-passing the 'usual channels' and making a direct approach to higher authorities, when he deemed it necessary. In 1841 he wished to obtain sanction for an increase in his financial estimate for 1842-43, from £1,400 to £1,900. For this increase he had a good reason, namely, the addition to his staff of two new men, John Phillips, the palaeontologist, and young Andrew Ramsay, later to become director himself.

Nevertheless, it was not a good time to seek permission from the Treasury for an increase, however modest. The national finances were in an alarming state, with a falling revenue and a rapidly mounting deficit. In August 1841, a Tory government with Sir Robert Peel as premier had replaced Lord Melbourne's Whig government, and drastic measures were expected. The winter of 1841-42 proved to be one of the worst, economically and industrially, through which Britain has ever passed. Yet, on November 1, 1841, De la Beche wrote from Fishguard to Canon Buckland, then president of the Geological Society as well as professor of geology at Oxford, explaining his apprehension over his estimate, and suggesting that a direct approach to Sir Robert Peel would be of assistance. Buckland immediately forwarded this letter to the premier, with a covering note containing a warm recommendation of De la Beche, his work and his staff. On November 8, with remarkable promptitude and commendable brevity, Peel replied: "My dear Dr. Buckland, Pray assure Mr De La Beche that the Geological Estimate which he proposes for the ensuing year shall undergo no curtailment. Most truly yours, Robert Peel".

It is an interesting sidelight on the character of the great politician and financial minister to find that at such a time he showed no inclination to allow cheese-paring at the expense of a scientific service. It should be remembered, of course, that Peel had been a Fellow of the Royal Society since 1822, and had become a Fellow of the Geological Society in 1840, so that some sympathy towards science was not unexpected. However, only six months later, he was to introduce a Budget in which, faced with a deficit of more than two million pounds, he imposed an income tax of 7d. in the £—a most unpopular measure, for there had been no direct tax on income since the war ended in 1815. Gideon Mantell, another well-known geologist, recorded in his journal on May 18, 1843: "Went into the City and received my dividends at the bank: Peel's rascally tax being subtracted from my hard earnings".

The economic worth of the work then being carried out by the Geological Survey in the South Wales coalfield was undoubtedly appreciated; and the award of a knighthood to De la Beche in April 1842 no doubt indicated that Peel valued his services highly.

A few years later, in August 1844, De la Beche again asked Buckland to approach Sir Robert Peel. This time he pointed out the disadvantages of the Geological Survey's subordinate position under the Trigonometrical Survey, which had its headquarters in Southampton, and was itself in turn controlled by the Board of Ordnance. The Museum of Economic Geology, which Sir Henry also directed, was administered by the Department of Woods and Forests, and a transfer would bring the Survey and the Museum under one head, and the Survey itself into closer relation with mining and agriculture. This application also was successful, and the Treasury minute of December 27, 1844, effecting the transfer, was drawn up by Peel himself.

In 1848 Sir Henry de la Beche, then a member of the Council of the Royal Society, and also president of the Geological Society, was entrusted with the delicate task of discovering whether Peel (no longer holding political office) would stand for the presidency of the Royal Society, then becoming vacant by the resignation of Lord Northampton. An account of the meeting is recorded in a memorandum by Peel, who

wrote, *inter alia*: "I replied that I was prepared to give an immediate and decisive answer—that in my opinion the President of the Royal Society ought to be a distinguished man of science . . . that I would oppose any other nomination than that of a man of science". In the event, Lord Northampton was succeeded by William Parsons, third Earl of Rosse, and a distinguished amateur astronomer.

Peel died suddenly in 1850, and so did not witness the great events of 1851. In this year, on May 12, the new Museum of Practical Geology in Jermyn Street was opened by the Prince Consort; and in the following November the Government School of Mines and of Science applied to the Arts (now the Royal School of Mines and the Royal College of Science) was opened in the same building, with Sir Henry de la Beche as its first president.

This was the climax of De la Beche's career. In 1853 his health began to deteriorate, although he continued to attend regularly at his office. Early in 1855 he was awarded the Wollaston Medal by the Geological Society; but he was already confined to a wheel-chair by partial paralysis. He died on April 13 at the early age of fifty-nine, only two days after his last visit to the Museum. Sir John Flett, director of the Geological Survey during 1920–35, wrote of De la Beche in his centenary history of the Survey: "He had lived to see the fruition of his great designs, and to-day at South Kensington the Geological Survey and Museum and Royal School of Mines, housed in magnificent buildings, form a striking monument to his far-sighted policy and sound judgment. Nothing that he did has failed and with the progress of the years all his projected enterprises have expanded and developed".

¹ *Nature*, 143, 254 (1939).

SIR JOHN BLAND-SUTTON, BART. (1855–1936)

By W. R. BETT

A HUNDRED years ago, on April 21, 1855, at Enfield, Middlesex, was born John Bland Sutton, the eldest son of a market gardener, butcher and amateur medical practitioner, and later to become the most eminent pathologist-surgeon of his day and a great naturalist in the tradition of John Hunter, whom he worshipped. Like Hunter, he was brought up in the country, and like Hunter, he was proud of his humble origin and, indeed, also of his Cockney accent. At the age of ten he was taken to see Hunter's house in London, at Earl's Court, and the den in the garden where the menagerie of wild animals was kept; and ever after, this great surgeon-naturalist remained his kindred spirit. Having worked for two years as a school-teacher, Sutton decided to become a surgeon and, like his hero, approached surgery through anatomy and comparative anatomy. After a preliminary grounding at Thomas Cooke's private school of anatomy in Bloomsbury, he entered the Middlesex Hospital Medical School in 1878 at the age of twenty-three, and while still a student was appointed prosector of anatomy, and in the following year junior demonstrator. Having no money to spend on sport and social diversions, he worked all day and far into the night. He was a popular teacher, whose witty demonstrations came to be known as 'Sutton's

entertainments'. In 1882 he qualified as a medical practitioner, and two years later obtained the fellowship of the Royal College of Surgeons. In 1886 he was elected assistant surgeon to the Hospital and lecturer on anatomy in the Medical School.

Sutton's long and intimate connexion with the London Zoological Gardens began with his appointment in 1881 as prosector, and for five years he performed the post-mortem examinations on all the animals dying in the Gardens. Many of his findings formed the basis of his first book, "Ligaments: their Nature and Morphology" (1887), which revolutionized anatomy by explaining some of its anomalies in the light of morphology. In "Evolution and Disease" (1890) he attempted to show that there is a natural history of disease, as well as of plants and animals. Keenly interested in the problem of rickets in young lions at the Zoo, he fed them a diet of cod-liver oil, bone dust and infant's food, but this was not "a pecuniary success".

Around 1889 a Dr. J. B. Sutton opened a shilling dispensary in the Euston Road. As this was rumoured to be Bland Sutton's venture and he was frequently called out in the night for "cheap midwifery", he assumed the name of Bland-Sutton by deed poll.

A new chapter in Bland-Sutton's life started in 1896 when he was elected surgeon to the Chelsea Hospital for Women, which he rapidly made the Mecca for pelvic surgeons from all over the world, for he created the gynæcological surgeon in place of the gynæcologist. When he first performed hysterectomies for fibroids he was called "a criminal mutilator of women"; but he was later hailed as a pioneer who disestablished the "couch-invalid", rendering her capable of earning her own living or becoming a companion to her husband. He made a fortune out of hysterectomies and for a time appeared to lose interest in general surgery. He was the first to remove a tubal mole, which he made a familiar condition to the gynæcologist, and his papers on the origin of ovarian cysts in animals, on ovarian dermoids and on menstruation in monkeys were classics in their day.

For many years regarded as the surgeon to the dental surgeons, Bland-Sutton was an honorary member of the Odontological Society, before which he read valuable papers on comparative dental pathology, and to him we owe the first scientific classification of odontomes. His book "Tumours, Innocent and Malignant" (1893, seventh edition 1922) was a 'best-seller' and won him world-wide fame. It was so copiously and so dramatically illustrated as to make the text seem almost superfluous; the author had no use for photographs, and rendered a great service to medicine and to literature by resuscitating the art of wood-engraving. A fluent and attractive writer and speaker, he was forceful, witty and adept in producing unexpected similes.

A knighthood was conferred on Bland-Sutton in 1912, which was followed by a baronetcy in 1925, and he served as president of the Royal College of Surgeons of England during 1923–26. He had now reached the summit of his surgical career and fame and of his ambition. As an operator he was incredibly quick and used the minimum of instruments. In profile he bore a marked resemblance to Napoleon, and he had many Napoleonic traits in his mental make-up, such as self-reliance, ambition, natural leadership of men, coolness in a crisis, and aloofness of personality. His beautiful dining-court in Brook Street, an exact replica in miniature of the hall of honour in the