

STEVENSON BUCHAN  
CBE, BSc, PhD(Aberd), FCIWEM, FGS

Stevenson Buchan served the (then) Geological Survey of Great Britain (GSGB) and its successor the Institute of Geological Sciences (IGS) for 40 years, first as a field geologist, then in his best known role as Head of the Water Department, and thirdly in an administrative capacity in the Directorate. These three phases of his wide-ranging geological career saw him mapping strata in Scotland and England, surveying for strategic minerals during the Second World War, practising and organising hydrogeological research and surveys and assisting in the creation of the IGS by the merging of the former Overseas Geological Surveys and the GSGB. To all of these tasks he brought a deep sense of responsibility, energy and resource.

Steve was born in Peterhead on 4th March 1907 and died at Rockland St Mary, Norfolk on 24th July 1996. He first attended the Central School, Peterhead and then Peterhead Academy before becoming a student at Aberdeen University in 1925. He graduated with First Class Honours in Geology in 1929 and the following year, whilst demonstrating in the Geology Department, undertook research into the granites and dykes in the vicinity of Peterhead. He played an active role in University life - being awarded a full blue by the Athletics Association and becoming President of both the Scientific and the Geological societies.

In 1931 he joined the GSGB, then centred on Jermyn Street, London, and during the next seven field seasons worked as a field geologist. He also collected representative rock specimens from the South of England for inclusion in an exhibit in the 'new' Geological Museum in South Kensington, to which the GSGB moved in 1934. He surveyed Lower Cretaceous strata around Sevenoaks, Lower Jurassic in the Bridport district and Eocene on the Isle of Sheppey. In 1933 and '34 he spent the Scottish field seasons in the Shetland Isles, mapping Old Red Sandstone and Dalradian metamorphics on Foula and Devonian lavas on Papa Stour. In 1933 he was awarded his Doctorate for his Peterhead researches. Three papers were published on these stratigraphical studies, apart from his contributions to the respective maps and memoirs. His winter seasons were occupied in mapping the culverted streams of London and preparing for publication many of the 1:10,000 geological maps of the capital. This work involved analysing records of the numerous wells and boreholes then drawing extensive water supplies for business and commercial properties from the Lower London Tertiaries and the Chalk of the London Basin. The product of these hydrogeological investigations was the publication in 1938 of a memoir *The Water Supply of the County of London from Underground Sources* which became a classic of its time.

During the 1939-45 War, Steve was occupied with surveys for strategic minerals as well as with water supply problems in all parts of the country. His work was directed towards opencast coal in the north of England, as well as the search for tin and wolfram. The location of groundwater supplies for the many military camps, airfields and ordnance factories then being established, and the identification of a network of wells suitable for use as emergency supplies for London, were also prime tasks. He published on the opencast work and also contributed to 17 Wartime Water Supply Pamphlets issued by the GSGB. These varied early researches were recognised by the Geological Society by the award of the Lyell Fund in 1944. Being in a reserved occupation under the wartime employment regulations, Steve was refused permission in 1945 to accept the offer of a lectureship at Cambridge University.

His, by then, encyclopaedic knowledge of the distribution of the groundwater resources of the country assisted greatly in compiling the GSGB input to the drafting of the Water Acts of 1945 and '46. He was appointed Head of the Water Department to oversee the new obligations the Acts placed upon the Survey. Under the relevant regulations the GSGB became responsible for receiving notification of all new water supply wells, as well as annual returns from major groundwater abstractors recording the volumes of water pumped and the water levels in their wells. Areas of over-development in the main aquifers, characterised by falling water levels as in London and Birmingham, were defined and a licensing system for both existing and new wells was introduced. From 1950, although not required by statute, Steve encouraged the water industry to create a network of permanent observation wells monitoring the condition of the principal aquifers. He recognised the necessity of introducing the quantitative approach to the assessment of groundwater resources then being developed abroad and recruited staff to undertake the necessary research. The basic data they required were available via the well records collected by the Survey for over a century and were augmented by many young women - Steve's 'Water Babies' - employed on siting and registering the records and publishing synopses of them in a Well Catalogue Series.

From the early 1950s his colleagues began to apply hydraulic analysis, augmented by geophysical methods, to groundwater flow problems as well as undertaking both local and regional resource assessments. Through these various supervisory roles he can be seen as the creator of the databases used then, and to an extent still, to advise central government and the water industry on the administration of the national groundwater resources. He was consulted not only by the relevant Ministries, but also by the water engineers of many local authorities and industries and thus he was influential in the approach to groundwater development in the post-war years when new supplies were being sought.

His personal research interests were in the applied fields of artificial recharge of overdeveloped aquifers and groundwater pollution. Jointly with Dr A Key of the Public Health Laboratories he undertook an early extensive review *Pollution of Ground Water in Europe*, published by the WHO. He also published a survey of the largest, long-term groundwater pollution event in Britain - the disposal into the Chalk of drainage water from the coal mines in Kent. Having seen artificial recharge practised in North America and elsewhere abroad, he foresaw the local need and, with engineers of the Metropolitan Water Board, initiated experimental work in the Chalk under the Lee Valley, as well as in the Sherwood Sandstone of Nottinghamshire. The results were published in the journals of the several engineering and scientific societies then serving the water industry, illustrating by example the essential need for a multidisciplinary approach to groundwater investigations. These societies are now merged into the Chartered Institute of Water and Environmental Management, of which he was elected an Honorary Fellow. Altogether he contributed some fifty papers and articles to the literature.

National and international recognition of Steve's work led to various honours and appointments. In 1960 the administrative phase of his career began by his promotion to Assistant Director of the GSGB, responsible for the Specialist Departments, the Geological Museum and work in Northern Ireland. The same year he undertook a lengthy lecture tour in

North America within the Visiting Scientist Programme of the American Geological Institute and in 1962 was elected FRSE. The International Association of Hydrology elected him President of its International Groundwater Commission and Chairman of the Standing Committee on Hydrogeological Maps. He was a founder member of the International Association of Hydrogeologists, becoming its President from 1972 to 1977 and subsequently an Honorary Fellow. He acted as British Delegate to the UNESCO Co-ordinating Committee for the Hydrological Decade. For some years he chaired the Hydrology Sub-Committee of the Royal Society and Section 'C' of the British Association for the Advancement of Science at its Dundee meeting in 1968, as well as serving on the DSIR Committee for Hydrological Research. Outside the purely professional field he lectured widely and was occasionally a member of the panel of the 'Brains Trust' - a popular BBC radio programme of the time. In 1967 he was appointed Chief Geologist of the IGS and the following year Deputy Director, responsible to the Director for all work in the United Kingdom. Forty years after joining the organisation Steve retired in 1971 and was awarded a CBE in recognition of his services to British Geology and the water industry.

Stevenson Buchan's personal style and relaxed approach to life was well suited to the enthusing of the bevy of Water Babies he recruited to compile the well-record collection. His encouragement and ability to delegate led his colleagues to develop a wide range of research techniques for the investigation of the then unique hydrogeological problems which were emerging from the previously uncontrolled development of water resources. His thoughtful approach to life in his professional career was equally important at home, whether in the selection of the fruit trees for his garden or of the flavours for the immensely powerful liqueurs he produced. Always accessible, Steve will be remembered by a wide circle for his energetic enthusiasm, his patience, humour and liberal characteristics. He married Barbara in 1937, who survives him together with their daughter Anne and son Stuart, a petroleum geologist.

D A GRAY