



The Sinai Expedition 1972. Left to right: Alexandru Lupu, Jannies Kestenbaum, Limel Shalit and Ronnie Tylecote.

Ronnie Tylecote – through the desert to IAMS

In Ronnie's now classic book *Metallurgy in Archaeology* (London 1962), appeared the first proposal for the reconstruction of a copper smelting furnace at Timna, based on the descriptions of the metallurgical finds made during my Arabah survey and first published in my report 'Ancient Copper Industries in the Western Arabah', *Palestine Exploration Quarterly*, 1962. Since this paper in *PEQ* had caused a 'tidal-wave' of opposition by eminent representatives of Biblical Archaeology against my conclusion that Nelson Glueck's metallurgical theories about 'King Solomon's Mines' and, foremost, the 'huge Solomonic copper smelter of Ezion-Geber (Tel el Kheleifeh on the shore of the Red Sea), "Pittsburgh" of the Near East', were not acceptable from the point of view of the facts in the field and basic metallurgy, this was the first, and very welcome, sign that metallurgists took the Timna findings seriously.

Several years later, in 1966, Ronnie walked into my excavation of the large smelting camp Site N.2 in the Timna Valley, accompanied by Alexandru Lupu, metallurgist of the Technion Haifa, who shortly before had joined my Arabah team. First I was somewhat upset about the unannounced 'visitor' but I soon became

fascinated by Ronnie's personality, his straight-forwardness and unreserved readiness to share information and experience. For several days we inspected the Timna sites and the metallurgical debris uncovered at Site No. 2, including the first almost complete copper smelting furnaces ever discovered. These days laid the ground for our collaboration – and friendship – which was to last for more than twenty-five years. Believing that scientific information should be made available as soon as possible, Ronnie immediately drafted the first metallurgical report on our Timna excavations: R. F. Tylecote, A. Lupu and B. Rothenberg, 'A Study of Early Copper Smelting and Working Sites in Israel', published in *Journal of Metals* 95, 1967.

During the years that followed, Ronnie took part in the excavations at the Roman-Early Islamic smelter at Beer Ora, the Egyptian Mining Temple at Timna, and he dug the first trial trench at the Egyptian smelting camp No. 30 in Timna, which was decisive for our work plans afterwards. Ronnie also took part in several of our field expeditions in Southern Sinai and himself excavated an Early Bronze Age smelting furnace (at Site 590 in Wadi Riqeita). It was quite astonishing to watch Ronnie



Ronald Frank Tylecote
1916–1990

working with heavy tools in the heat of the desert, in spite of his handicap (a leg lost in a climbing accident). In the enormous slag heap of Bir Nasib, in South Sinai, Ronnie excavated a deep trial trench and we could not get him out of this 'hole' until he had reached its bottom – and the answer to a decisive stratigraphic problem.

In the wake of the Timna Exhibition at the British Museum in 1971, which showed our finds from the Egyptian Mining Temple and also the first copper smelting furnace ever seen in Europe, 'archaeo-metallurgy', as a distinct branch of archaeological science, began to take shape. Due to the initiative of Sir Val Duncan (then chairman of RTZ) and Sir Mortimer Wheeler (Secretary of the British Academy) the Institute for Archaeo-Metallurgical Studies (IAMS) was set up, and Ronnie was invited to become one of its founder Trustees. Ronnie continued to serve IAMS and on its Scientific Committee until his untimely death. He contributed decisively to the structuring of IAMS as an independent research group directed towards extractive metallurgical investigations at major mining and smelting sites, in the Near East (Arabah, Timna, Sinai) as well as in south-west Europe (Huelva Province, Rio Tinto, Almeria and others).

During the early years of IAMS, and in the context of its metallurgical research programme, Ronnie, together with his students at Newcastle University, began the experimental study of early, prehistoric, smelting technology, based on our excavations at Timna. It was Ronnie's 'do-it-yourself' research approach which became instrumental for the development of experimental 'archaeo-metallurgy' – a term first introduced in the IAMS

Monograph Series 'Archaeo-Metallurgy – One: Chalcolithic Copper Smelting', by B. Rothenberg, R. F. Tylecote and P. J. Boydell, 1978. This first experimental copper smelting study, laid the foundations for subsequent large-scale experimental research into Bronze Age copper smelting, initiated by IAMS as the concluding archaeo-metallurgical research programme of the Arabah Project. The definitive report on the two major experimental research programmes based on Timna, one of which (by Dr John Merkel) was supervised by Ronnie, has now been published (Beno Rothenberg (ed.), *The Ancient Metallurgy of Copper*, IAMS, 1990).

Although systematic archaeo-metallurgical research and the study of Metal in History, has initially been the major objective of IAMS, it was soon realized that it would be of decisive importance for the development and proper academic establishment of archaeo-metallurgy, to set up full-scale academic training facilities for archaeo-metallurgy, which at the time did not exist in any academic institution. Since for many years I had close connections with the Institute of Archaeology, London University, we began to teach an MSc course in archaeo-metallurgy and soon became officially affiliated to the Institute. This was the right opportunity to create closer ties with Ronnie. For some time he had intended to take early retirement from his post as Reader at Newcastle University and we invited him to take up a Visiting Professorship at the Institute of Archaeology within the IAMS programme. Ronnie moved to Oxford and his participation in our projects and teaching programme proved to be of exceptional significance. Although Professor H. G. Bachmann, Dr John Merkel,

myself and others, took part in the supervision of our research students, the major share of this task fell to Ronnie. Ronnie's weekly student's day in the Institute soon turned into an important 'establishment'.

Ronnie could be quite demanding with his students, but hidden beneath was a devoted and patient teacher, especially for talented and hard-working students. His students will forever remain grateful to him for his dedicated tutorship.

For his colleagues Ronnie was always ready to discuss problems, to take on the investigation of intricate material, and to evaluate results; he would soon come up with short, comprehensive reports which, over the years, have become Ronnie's 'trademark'. Some of these 'progress reports' are still on my desk, to be included in forthcoming IAMS publications on Timna and Sinai, and are very much treasured.

We shall always remember Ronnie's good humour and friendly smile, even in difficult circumstances, in the harsh desert or under professional strain and, not least, his loyalty. IAMS will miss Ronnie Tylecote's wide scientific experience and his professional integrity.

Beno Rothenberg

To his friends, Ronnie's death on Sunday, 17 June 1990, did not come as a surprise, though none of us had given up hope that he would overcome his severe, malicious illness. Brave as he was all through his life, he had faced and mastered his fate, as became evident through his will. His special library, a working instrument of a lifelong engagement in metallurgy and metallography, has been bequeathed and will subsequently be made the R.F. Tylecote Bequest within the library of the Institute of Archaeology, University College London. Furthermore, scholarships for students will be established. Ronnie Tylecote, justly named the founder of archaeo-metallurgy, will be remembered not only by those who have known him, worked with him and relied on his experience plus knowledge, but also by those who will follow in his and our footsteps.

Obituaries in *The Times* (27 June 1990) and by Amina

Chatwin, honorary editor of the *Journal of the Historical Metallurgy Society*, have given ample reference to Ronnie's contributions to the many fields and sectors which can be summarised under the heading: Metals, Past and Present. His books: *Metallurgy in Archaeology* (1962); *The Solid Phase Welding of Metals* (1969); *A History of Metallurgy* (1976); *The Prehistory of Metallurgy in the British Isles* (1986), and *The Early History of Metallurgy in Europe* (1987), his numerous articles in scientific journals, and his almost thirty years as editor of 'his' journal, the *Journal of the Historical Metallurgy Society*, will secure him a paramount place in the pantheon of our science.

Though I knew him for many years through his publications, I first met him in person in 1972 in Israel. We were both members of a team on one of those memorable field trips through the Sinai peninsula organised and led by Beno Rothenberg. Ronnie's affiliation with Beno and the Timna Project dated back to the early sixties. One of the early papers by Tylecote, A. Lupu and B. Rothenberg appeared in 1967 in the *Journal of the Institute of Metals* under the title "A Study of Early Copper Smelting and Working Sites in Israel". It is justly considered a true classic. Many more papers on Timna at large were to follow. The field work kindled experimental studies on copper smelting, research on many related topics, and teaching at the University of Newcastle and in his later years as Honorary Professor at the Institute of Archaeology, University College London. One of these days we will have to compile Ronnie's complete bibliography. This will be a formidable task well worth its while. Only then will we know what a prolific man he was.

He will always be remembered as a warm-hearted, always cheerful and good-humoured friend. The day's hardships in the field could never upset or unbalance him, though since he had only one leg he had to suffer more than any of us. The discussions around the camp fire, his catching laughter and his sound judgement when different opinions arose, are still vividly on my mind. He has given us much as a colleague in science and as an unforgettable personality in comradeship. We pledge not to forget him.

Hans-Gert Bachmann