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C. M. KRAAY

COLIN MACKENNAL KRAAY

1918–1982

COLIN MACKENNAL KRAAY was born in Hampstead on 23 March 1918, the elder child and only son of Caspar Alexander Kraay, a rubber broker, and Henrietta Agnes, née Mackennal. His father, though he was of Dutch stock, and though indeed he served in the Dutch army during the First World War, is said not to have known the Dutch language: as he had been educated at Bordeaux, where the family had connections with the wine trade, French was his first language. His mother was the daughter of the Australian-born sculptor Edgar Bertram Mackennal, who, after studying in Melbourne, London, and Paris, was knighted after the unveiling in Pall Mall of his equestrian statue of Edward VII. Sir Bertram Mackennal was later to design the effigy on the British coinage of George V. It is not inconceivable that through this, and also through his grandfather's deep admiration for classical art (he was said always to carry a Greek coin in his pocket), Colin Kraay's interest in the art and coinage of the ancient world received its first stimulus.

Kraay's schooling began at The Hall in Hampstead, whence he moved at the age of eight to Ascham St. Vincent's at Eastbourne, where he developed a strong interest, permanently retained, in Egyptology. In 1931 he went to Lancing College, into Sanderson's House; and although his academic standard upon entry was not conspicuously high his movement up the school was swift. Within two years he had taken his School Certificate, and his Higher Certificate within four, by which time he was a house prefect, becoming a School Prefect in 1935 and Captain of the School in 1936. He was at this time a keen Fives player, and captained the school team in 1937: he also gained the rank of Cadet Officer in the school OTC. For three years Kraay was in the classical sixth form, and his master in that form has written of his two great qualities at that time, 'a natural authority and a sturdy independence of character which matured very early . . . he always had his own point of view and was impervious to crazes in the realm of ideas which so often sweep through adolescent societies'.

At this period at Lancing there was a flourishing archaeological society, founded in the late twenties by Basil Hansford, the

sixth-form master whose teaching was so strong an intellectual stimulus to his pupils, and called the Haverfield Society, after F. J. Haverfield, who had taught at Lancing from 1884 to 1893. The activities of this society were mainly limited to listening to papers read by boys or staff-members, and more occasionally by distinguished outside visitors such as Tessa Wheeler or Sir Arthur Smith Woodward, but there were also termly expeditions, for example to Pevensey Castle or Petworth House. And the South Downs, still unploughed, could offer well-known archaeological sites like Cissbury, Park Brow, and Chanctonbury, all within walking-range on Sunday afternoons, where flints or pottery sherds could be collected and an introduction to field-archaeology and problems of identification gained. Kraay played an active part in the Haverfield Society, and even carried out a small excavation at a sixth-century Saxon cemetery in the school grounds which he recorded in *Sussex Notes and Queries*, vi (1937), 91 (cf. *Sussex Archaeological Collections*, xci (1940), 170-2).

The Haverfield Society maintained a modest museum which at this period, and largely through Kraay's instrumentality (for, as Professor Sheppard Frere recalls—himself Captain at Lancing a year before—even at the age of seventeen Kraay was well aware of the importance of nursing benefactors), was enlarged by the ethnographical gifts of Dr Louis Cobbett of Cambridge, an old member of the school, who also presented Greek, Italian, and near-eastern antiquities, together with some Mesopotamian, Palestinian, and Egyptian objects. The arrangement and cataloguing of the objects in the museum was largely done by Frere and Kraay, of whom Frere records that Kraay went to the length of acquainting himself with the hieroglyphic script in order to elucidate the Egyptian items. What Kraay's sixth-form master remembers most vividly of Kraay at that time, nearly fifty years ago, is, jointly, his personality and his devotion to archaeology.

In the autumn of 1937 Kraay went up with an open Classical Exhibition to Magdalen College, Oxford, to read Honour Moderations and Literae Humaniores. His tutor for the former, in his first one and a half years, was Mr Colin Hardie, who has recorded that, while Kraay was not conspicuously a linguistic or literary scholar, he knew already where his strength lay. The archaeological seeds implanted at Lancing, and even perhaps earlier, were now growing, and were strengthened by his choice of Homeric Archaeology as a special subject. Nevertheless, it seems likely that the purely linguistic rigours of Classical Honour Moderations began to act as a strong discipline at this time in the

control of archaeological enthusiasm, and it is conceivable that it was during this period that he began to lay the systematic foundations of the coin collection which he had come to possess, to an extent of some distinction in the Roman field, ten years later.

Kraay gained a second class in Honour Moderations in March 1939, and embarked for one term upon the work for *Literae Humaniores* before going off in the long vacation to excavate at Mycenae under A. J. B. Wace. It was there that he was overtaken by the outbreak of the Second World War: his happy and optimistic nature had ignored warnings and exhortations from his anxious family to return home. Fortunately, he was able to secure a passage by sea to Marseilles, and thence to England. Once back, he joined the Oxford and Bucks. Light Infantry, and was stationed for a time at Cowley Barracks. Commissioned in 1940, he was later stationed at Icklingham, where, while crossing a farmyard on manoeuvres, he chanced to observe the Romano-British lead cistern with chi-rho mark which is now in the British Museum. The year 1942 saw his battalion go via the Cape to Bombay, and thence to Persia (where he visited Kirkuk on a borrowed motor cycle): as part of the 5th Division he afterwards crossed the Middle East to join the Eighth Army, and saw action near Tunis early in 1943. In that same year his unit moved to Italy—he took part in the landings at Salerno and Anzio—and in 1944, as a member of the No. 1 Special Force at Monopoli on the Adriatic, he became Air Operations Officer for the support and encouragement of Italian partisan formations, in which capacity he was joined by Margaret (Peggy) Prince (then a Cadet Ensign FANY) as his personal assistant.

At the end of 1944 No. 1 Special Force was moved to new headquarters at Siena, in the aesthetic and antiquarian delights of which Kraay and Peggy Prince revelled. By March 1945 they became engaged to be married; but permission to marry was withheld until after VE day in May, and even then it was a matter of difficulty to find an army chaplain to perform the ceremony, so greatly were chaplains in demand further north. In September 1945 Kraay was released from the army: he and his wife reached London by different routes on the same day.

Early in 1946 Kraay resumed his undergraduate career at Oxford. For the previous six years he had seen service from the Mediterranean to Persia and India, and he had been busy with the administrative duties of army life. Now, as a married man of twenty-eight, he returned to the academically critical study of Greek and Roman history (with the notable C. E. Stevens—

universally known as 'Tom Brown'—as his tutor) and of philosophy (under John Austin). He made the transition with no visible effort: it was difficult, then as always later too, to discover where for him his work ended and his leisure began, so great was his interest and pleasure in his work. Nor did fatherhood disturb the rediscovered rhythm of academic work when his son, Timothy David Mackennal Kraay, was born in July of that year. Kraay took his final schools in 1947 with a second class.

It was during this period of his Lit. Hum. work that Kraay made and increased his contacts with the Heberden Coin Room in the Ashmolean Museum, where he at once showed an already wide knowledge and critical judgement in the field of Roman imperial coinage, with a rapidly growing interest in the issues of the decade and a half following Nero's death. This interest was to win for him the Barclay Head Prize for Ancient Numismatics in 1948, and to provide the groundwork for the winning entry for the Conington Prize in 1951, later expanded into his successful D.Phil. thesis in 1953 on 'The *aes* coinage of Rome and its subsidiary mints in the West, A.D. 68–81'. But first some kind of regular income had to be secured. In 1948, like others both before and after him, he gained a toe-hold in the Coin Room as a temporary and part-time Assistant Keeper: the rest of his time was employed as Lecturer in Ancient History at Wadham and Keble Colleges, from which he was to learn the techniques of teaching to be employed from 1949 onwards in taking Coin Room classes.

With the keenest of trained eyes, unfailing energy, and insatiable curiosity Kraay had by now gained a highly detailed knowledge of the great range of the collection in the Coin Room. And his long list of published work was beginning to appear, at first exclusively on Roman imperial coinage, with joint emphasis on early imperial *aes* coinage (he worked in 1953, 1954, and 1957 on the Vindonissa finds in Switzerland) and on the post-Neronian issues. The former study was to give him a penetrating insight into the problems of countermarked *aes* coins, found in such great numbers in early imperial finds, and into the circulation and chronology of such early *aes* (he later published definitive studies both of countermarks and also of the chronology of the *aes* of Nemausus), while the latter enabled him to advance interesting new theories concerning the Civil War coinages of AD 68–9. All this was at a time when work on the imperial coinage was reacting to Professor Michael Grant's stimulating and controversial studies; and Kraay took full advantage of the new avenues thus opened up.

He came also under a different and more closely felt influence. E. S. G. (later Sir Edward) Robinson was still Reader in Numismatics at Oxford, giving regular instruction in the Coin Room; and it was impossible to escape the stimulus which this learned and gentle man exerted. J. G. Milne, Robinson's predecessor as Reader at Oxford, had chosen as his primary task in the Coin Room the supervision and expansion of the Greek series. With Milne's death in 1951 this responsibility fell vacant, and Robinson, as a weekly teaching visitor from his own curatorial duties at the British Museum, plainly could not assume it. The question therefore arose, who should do so? For a time there was debate among the higher levels of the Lit. Hum. faculty, and alternative names were canvassed; but in the end Robinson's quietly persuasive authority, backed by his now clear understanding of Kraay's potential, was successful, and in 1952 Kraay was established as Assistant Keeper of Coins, with primary responsibility for the Greek collection.

The transition from the Roman imperial to the Greek field was made without any hesitation or reluctance. Kraay continued his college teaching in Greek and Roman history until 1957, thus keeping abreast of current work in those fields. He was in close weekly contact with Robinson, for whom he played the part of an invaluable foil, the older and the younger man endlessly and energetically disputing points of style (always important for Robinson) and points of chronology (always important for Kraay, who came to lean more and more, with an archaeologist's instinct, upon the evidence of coin hoards). Kraay was far from abandoning his Roman interests—publications on Roman numismatics are sprinkled through his long bibliography down to the end of his life—but he threw himself into the study of Greek coinage with all his quite extraordinary energy, and by 1956 had published his substantive and plainly authoritative paper on the archaic 'owls' of Athens. The same energy and zest enabled him in a very short time to learn in detail the contents of the Greek cabinets in the Coin Room, to search out addenda for them, and to continue his numismatic classes.

It was open to the close observer to speculate, at this time, whether the change from Roman to Greek responsibilities in the Coin Room had perhaps effected a permanent change in Kraay's whole career. By nature he was the most friendly and companionable of men, with experience of the world, a keen eye, an alert brain, and considerable expertise in the purely commercial aspects of the numismatic world. He was later to say (American

Numismatic Society's Annual Report, 1981, p. 34) that only once was he in danger of being diverted, when he very nearly became curator of a general collection of classical archaeology. However—and whenever—that may have been (and it was probably somewhat later), in the 1950s Kraay, if he had lived and worked on the European mainland, might well have become a numismatic *expert* in the European sense, for he possessed the joint talents; his scholarly knowledge was already very wide, and his relations with the trade, at home and abroad, were friendly, discreet, and shrewd in equal degree.

The transition to Greek numismatics would have resolved any doubts. Hungry for fresh knowledge, keen to confront and solve fresh problems, and with a fresh appetite for the comparative study of Greek hoard material, he next attacked the multiple chronological difficulties of the coinages of Sybaris, Croton, Caulonia, and Metapontum in south Italy. Here he achieved substantial success in the dating and inter-connection of the various series, and it is not too much to say that, following his earlier work on Athens, his studies of south Italian mints in 1957–60 established his firm reputation as a leading scholar in Greek numismatics. This period was crowned by two months of study-leave in 1962 to visit Greece—whither he drove light-heartedly with Peggy—for archaeological and numismatic study based at the British School at Athens.

By now Kraay was approaching the prime of his years and likewise of his academic work. Secure and busy in his Ashmolean post, widely recognized at home and abroad for his scholarship, happy in his home life with a wife who shared his keen interest in the arts (and especially paintings and other *objets d'art*), he now developed his natural characteristics to the full. His abundant energy continued unabated. It was to be seen in his smooth, swift gait and in his remarkable physical agility; in other respects too, most notably in his cool, detached, and yet firmly determined approach to the solution of a problem, whether one of everyday life or one of a purely academic nature. He could distance himself from the non-essential and concentrate exclusively on the core of a problem: he was, as has been emphasized by his wife, born essentially impersonal. This could often mean that he paid a greater instinctive attention to the objective factors in inquiry and argument than to the other factors, the purely human personalities, involved in such argument. Not that he was ever lacking in natural sympathy, kindness, or courtesy: he was the kindest and most courteous of men. But his orderly and strongly

logical nature always drove him to give primary consideration to fact; and this may well have been the fruit of his earlier archaeological indoctrination.

During the decade 1960–70, when he became University Lecturer in Greek Numismatics and, shortly after, was promoted as Senior Assistant Keeper in the Coin Room, Kraay began a programme of wider travel. For some time past he had been prodigal in the time accorded to addressing local societies all over Britain; and now he was to make his personal mark abroad. In 1961 he attended the International Numismatic Congress in Rome, with full delight in revisiting old scenes. In 1966 he visited Copenhagen to work on Greek material, and later that year accompanied E. S. G. Robinson to inspect the Greek coins in Berlin; and in the following year he attended the International Numismatic Congress in Copenhagen, where he was invited by the International Numismatic Commission to serve on an international committee to promote a new edition of S. P. Noe's *Bibliography of Greek Coin Hoards*. The next two years saw him deliver the J. H. Gray Memorial Lectures at Cambridge and visit south Italy and Sicily on a British Academy grant in connection with the Noe project, while in 1970 he received and enjoyed nine months of study-leave to write a book, to work on the Noe project, and to study the archaic coinage of Himera. From 1965 onwards until 1973, moreover, he regularly accompanied Hellenic tours as a guest lecturer, taking the keenest possible pleasure in seeing new places and revisiting those previously seen.

Nor, in this busy decade, had he neglected the normal routine of research and publication at Oxford. A primary stimulus had come from the Coin Room's acquisition in 1955, through the munificence of the Robinson Trust, of the famous collection of Corinthian 'pegasi' formed by Oscar Ravel and upon which Ravel had based his well-known *Poulains de Corinthe*. Apart from this, Kraay devoted much of his time and a newly found interest to the analysis of Greek coins by neutron activation, provided a new English-language commentary for Max Hirmer's splendid photographs of *Greek Coins*, co-edited (with G. K. Jenkins) a notable *Festschrift* in honour of E. S. G. Robinson, and wrote two small but valuable books on the *Coins of Ancient Athens* and on *Greek Coins and History* as well as an Oxford fascicule of the *Sylloge Nummorum Graecorum* on the coins of south Italy, Sicily, and Carthage. Besides all this, there was a stream of authoritative articles and reviews in the learned journals of England, France, Switzerland, Italy, and America. The intellectual machine was working swiftly and

smoothly, and very fruitfully. Kraay was everywhere welcomed for his contribution, energy, and sociability. Nowhere were these qualities more warmly welcomed than at Wolfson College in Oxford, of which he had been made an Official Fellow in 1966. He threw himself with zest into the organization and development of this new graduate college, and made it the regular centre of his wide and generous hospitality; and his success in this sphere was reflected by his appointment as Vice-gerent of the college from 1971 to 1973. His easy skill and wise judgement, obvious even in his younger army days, were busily employed at Wolfson, and his deployment of them was plainly seen to have enriched his experience of people and their ways and to have deepened his character. Professor Isaiah Berlin, who was President of Wolfson at that time, has written that 'it was not merely that he was charming, courteous, distinguished, gay, exhilarating: he was all these things, but apart from that I simply lived, was made happier, by his presence anywhere. Colin was a wonderful colleague—just, honourable, sensible, kind—an ideal member of an academic or indeed any society.'

There was indeed no doubt by now of his academic distinction. In 1970 he was elected President of the Royal Numismatic Society. Of his tenure of that office his successor, Dr Robert Carson, records that he brought to it

the qualities of administrative ability and of scholarship that marked his career in the Heberden Coin Room at the Ashmolean. He chaired with an effective blend of firmness and courtesy the debates of Council, and his presidency of Ordinary Meetings was distinguished by urbanity and an ability to contribute, himself, to the discussion of the wide variety of subjects presented. During his presidency the fellowship of the Society continued to expand . . . and no less than four volumes of the Society's series of Special Publications were produced in the course of his five-year tenure, apart from the launching of a new periodical, *Coin Hoards*. Though he would have disclaimed credit for these achievements, his able leadership was a considerable factor in the Society's success in furthering these projects.

In 1974 he assumed another and more complex presidency, that of the Consiglio of the Centro Internazionale di Studi Numismatici at Naples. The object of the Centro was to set up and foster a research centre, primarily dealing with the Greek coinages produced and current in Magna Graecia, and responsible for annual meetings of the Consiglio leading to two-yearly congress-seminars. Membership of the Consiglio included, besides Italian and English scholars, others from France, Germany, and the

United States. Presidency, with however much tact and urbanity, was never a simple matter; but Kraay, bravely resuscitating the Italian first learned in war-time Italy, took his duties in his stride, conducting the congress-seminars with flair and perception, making a whole new band of friends, and setting the research Centro on an increasingly firm foundation. Nor did he ever omit, when in Naples, to see whatever could be seen locally of ancient sites and museum collections. And with all these responsibilities he found time to attend (and lecture to) the New York/Washington International Numismatic Congress in 1973 and, in the same year, specialist meetings at Ghent and Louvain, as well as spending some weeks of study-leave in Jerusalem in 1975.

Amid this climax of international activity and distinguished recognition Kraay's record of publication was rising to a simultaneous peak. In 1973 there appeared the new *Inventory of Greek Coin Hoards*, launched seven years earlier, with Kraay, Miss Margaret Thompson, and Otto Mørkholm as co-editors. In 1975 he collaborated in the first fascicule of the Coin Room's *Sylloge*-style *Catalogue of Coins of the Roman Empire*, in which both 'imperial' and 'Greek' coins issued under Augustus were properly combined. Another fascicule of the Coin Room's Greek *Sylloge* followed in 1976—the year which saw the publication of Kraay's large and comprehensive *Archaic and Classical Greek Coins*.

This volume, conceived originally as an up-to-date substitute for C. T. Seltman's much earlier *Greek Coins*, at once proved itself to be something both more systematic and more scholarly. Kraay's widely penetrating knowledge, his cautious accuracy, his cool judgement (all first learned, perhaps, from Robinson) were well combined with his remarkable ability (based on his extensive knowledge of hoard evidence) to produce an integrated chronological picture of the multiple yet interrelated coinages of the Greek world. The quality of the achievement was widely acknowledged: in 1978 Kraay was elected Fellow of the British Academy, and in 1980 he was awarded the Huntington medal of the American Numismatic Society, to which he was invited as visiting lecturer for 1982 (he had performed the same duty in 1958).

Some idea of his other continuing activity, apart from a continuing stream of articles and reviews, with frequent lectures at Oxford and elsewhere, can be gained from the programme he set himself for a year's sabbatical leave in 1978. Such leave was additionally necessary by reason of his succession in the latter part of 1975 to the Keepership of the Coin Room; and he now set himself to complete for publication a corpus of the early coinage of

Himera for the Naples Centro, to prepare a monograph on the Chalcidian mints of Sicily for the University of Palermo, to write a chapter for the revised edition of the *Cambridge Ancient History*, to proceed with work on the coinage of Corinth and her colonies, and, not least, to complete his share in the writing and editing of the fascicule of the new *Historia Numorum*, conceived originally by Robinson and bequeathed by him as a *fidei commissum* to a small band of friends and colleagues. In this last task Kraay, while often feeling the frustrations arising out of a joint project, worked with loyal and dogged resolution, and left the mark of his very wide knowledge at numberless points: his most substantial contribution will probably be seen to lie in the brief but extraordinarily comprehensive introduction which, after Robinson's death, he was persuaded to write. He also found time in 1978 to make a trip up the Nile, rekindling his old interest in Egyptology.

His last three years included attendance at the Berne International Numismatic Congress in 1979 (where he gave a paper, surprisingly, on the mint of Rome, AD 260–8), a considerable number of lectures in various parts of Britain, and a much-enjoyed spell early in 1981 as Visiting Professor at the University of British Columbia. At the end of 1981 he was unwell, and fatal disease was diagnosed. Barely more than a month later, in 1982, he was dead: he was not yet quite sixty-four years old. At a memorial service at the University church of St. Mary the Virgin in Oxford on 13 March 1982 a large congregation of friends and colleagues assembled to remember him.

With typical fortitude and untypical resignation Kraay, during his mercifully short illness, had prepared his departmental colleagues for the inevitable end, and had made such provision as he could for departmental business. This was characteristic of a man whose quiet and strong loyalty to the work of the Heberden Coin Room had been constant for over thirty years in meticulous curatorship, augmentation of the collection, and discreet fostering of benefactions. For the very wide circle of his friends his death was the saddest of blows, robbing them of one whose alert, brave, witty, and humorous spirit had always enriched their lives. For his academic colleagues there was additional cause for sorrow. In the normal course of events there was so much which Kraay would have gone on to do: further fascicules of the Ashmolean Greek *Sylloge*, final stages of the initial fascicule of the new *Historia Numorum*, a further stream of articles and reviews in learned journals, yet more pupils to be well grounded in Greek numismatics. And there was still more to be hoped. Kraay had never

abandoned his first love, Roman imperial coinage; and the *Festschrift* which, together with Dr Robert Carson, he edited for presentation in 1978 to the present writer contained a brilliant chapter by him on the classification and attribution of the bronze coins of Vespasian which led one to hope that, in retirement perhaps, he would be persuaded to undertake the much-needed revision of *Roman Imperial Coinage*, ii.

The present century has seen the life and death of three decisive figures in the field of Greek numismatics, and it is of some real interest to contrast their achievements. Sir George Hill—historian, epigraphist, numismatist, polymath, with a towering knowledge—was perhaps a scholar who, not inappropriately in his day, viewed coinage as an indispensable confirmation of historical or epigraphic evidence. Sir Edward Robinson, a historian of equal quality and a numismatist of quite exceptional accuracy, with a highly trained aesthetic sense, held historical and numismatic evidence in finely balanced equipoise, so that he could from time to time stand accepted theory upon its head by elaborating a new view of a coinage and at the same time giving new strength to the historical evidence. Colin Kraay was conceivably more of a ‘pure’ numismatist than either of these. His knowledge of the interlocking evidence of coin hoards, and thus of the overall chronological inter-connection of the different strands of Greek coinage, was undoubtedly superior; and if he was less strong than Robinson as a pure historian, he was a match for him in his ability to overturn previous theory by proving, or at least very strongly arguing, an entirely new chronology. Moreover, it is likely that Kraay possessed the ability to present an integrated view of the coinage of the Greek world to an extent unknown since the earlier effort of Barclay Head.

It is for all this that he will be remembered by scholars in the world at large. For friends, colleagues, and pupils at Oxford the loss is even deeper. They are deprived of a charming, kind, and courteous companion, an able and no-nonsense administrator, and an enthusiastic teacher of a body of knowledge tirelessly gathered and logically constructed by very hard work over many years. Would that those years had lasted longer.

C. H. V. SUTHERLAND

My very warm thanks are due to Dr Kraay's wife Peggy for invaluable information, generously supplied, concerning his early years, as well as to Professor Sheppard Frere, Mr Colin Hardie, and Dr Robert Carson for other

important details. Without this generous assistance this memoir would have lacked much that is significant.

The following bibliography, which was most kindly compiled as a personal tribute by Miss Josephine Trafford, the secretarial mainstay of successive Keepers of the Heberden Coin Room, will show clearly the currents and cross-currents of Dr Kraay's working life.

C. M. KRAAY: BIBLIOGRAPHY

ABBREVIATIONS

<i>ANSMN</i>	American Numismatic Society, <i>Museum Notes</i>
<i>ANSNM</i>	American Numismatic Society, <i>Notes and Monographs</i>
<i>Class. Rev.</i>	<i>Classical Review</i>
<i>JHS</i>	<i>Journal of Hellenic Studies</i>
<i>NC</i>	<i>Numismatic Chronicle</i>
<i>N. Circ.</i>	Spink's <i>Numismatic Circular</i>
<i>Quad. Tic.</i>	<i>Quaderni Ticinesi, Numismatica e Antichità Classiche</i>
<i>SM</i>	<i>Schweizer Münzblätter</i>

- 'The coinage of Vindex and Galba, A.D. 68 and the continuity of the Augustan Principate', *NC* ix (1949), 129-49.
- 'Monnaies du Haut-Empire romain à Vindonissa', *Gazette numismatique suisse*, fasc. 11, 1952, pp. 49-56.
- 'Revolt and subversion: the so-called 'Military' coinage of A.D. 69 re-examined', *NC* xii (1952), 78-86.
- 'Römische Münzen der frühen Kaiserzeit in Vindonissa', *Gesellschaft pro Vindonissa, Jahresbericht*, 1952/3, pp. 5-13.
- 'A third century hoard of Roman coins from Ewelme', *Oxoniensia*, xvii-xviii (1952/53), 234-5.
- 'The *aes* coinage of Rome and its subsidiary mints in the West, A.D. 68-81, with special reference to mint organization, to the relative frequency of types and to their consequent interpretation.' Doctoral thesis, Oxford, 1954.
- 'Caesar's quattuorviri of 44 B.C.: the arrangement of their issues', *NC* xiv (1954), 18-31.
- 'Cast sestertius of Titus', *ibid.* 199-201.
- 'Greek coins recently acquired by the Ashmolean Museum, Oxford', *ibid.* 9-17.
- 'Le monnayage en bronze espagnol de Vespasian', *SM* v, Heft 17 (1954), 5-7.
- 'The titulature of Titus and Domitian on sestertii of Vespasian', *N. Circ.*, Oct. 1954, col. 395.
- 'The chronology of the coinage of Colonia Nemausus', *NC* xv (1955), 76-87.
- 'Gegenstempel auf Münzen aus tiberischer Zeit in Vindonissa', *Gesellschaft pro Vindonissa, Jahresbericht*, 1954/55, pp. 55-66.
- 'The Roman hoard from Appleford, Berks: a preliminary note', *N. Circ.* lxiii. 2 (1955), col. 62.
- Review of D. Raymond, *Macedonian regal coinage to 413 B.C.*, *Class. Rev.* v. 1 (Mar. 1955), 115-16.

- Review of D. Schlumberger, *L'argent grec dans l'empire Achéménide*, *ibid.* 115.
The aes coinage of Galba, *ANSNM* 133, pp. 1-56.
 'The archaic owls of Athens: classification and chronology', *NC* xvi (1956), 43-68.
 'The behaviour of early imperial countermarks', in *Essays in Roman coinage presented to Harold Mattingly* (Oxford, 1956), 113-36.
 'Gegenstempel auf überprägten römischen Münzen', *SM* vi, Heft 21 (1956), 4-7.
 'Épis de Métaponte—un supplément', *SM* vii, Heft 28 (1957), 73-7.
 'Two false Roman sestertii', *NC* xvii (1957), 121-2.
 'A propos des monnaies divisionnaires de Crotona', *SM*, Dec. 1958, pp. 99-102.
 'The coinage of Sybaris after 510 B.C.', *NC* xviii (1958), 13-37.
 'The Victoriata: a note on abbreviations', *ibid.* 39-41.
 'Gold and copper traces in early Greek silver', *Archaeometry*, i (1952); ii (1959).
 'Caulonia and S. Italian problems', *NC* xx (1960), 53-82.
 'A hoard of denarii from Verulamium, 1958', *ibid.* 271-3.
 'A third century Roman hoard from Great Chessells, Glos.', *ibid.* 275-7.
 'Two new sestertii of Domitian', *ANSMN* 9 (1960), 109-16.
 Review of S. P. Noe, *The coinage of Caulonia*, in *Class. Rev.* x. 2 (June 1960), 177-8.
Sylloge Nummorum Graecorum, v, pt. I (A), *Italy* (London, 1962).
The composition of Greek silver coins: analysis by neutron activation (with a chapter by V. M. Emeleus) (Oxford, 1962).
 'The Celenderis hoard', *NC* ii (1962), 1-15.
Die Münzfunde von Vindonissa, bis Trajan, Gesellschaft pro Vindonissa, 5 (1962).
 'The early coinage of Athens: a reply', *NC* ii (1962), 417-23.
 'Neutron activation analysis of ancient silver coins' (with M. J. Aitken, V. M. Emeleus, and E. T. Hall), International Atomic Energy Agency (Vienna, 1962). Reprinted from 'Radio isotopes in the physical sciences and industry', 261-8.
 Review of Alfred R. Bellinger, *Troy: the Coins*, in *Class. Rev.*, Dec. 1962.
 Review of *Sylloge Nummorum Graecorum: The Burton Y. Berry Collection*, pt. I, *Macedonia to Attica*, in *Class. Rev.*, Dec. 1962, p. 320.
 'The *Judaea Capta* sestertii of Vespasian', *Israel Num. Journ.*, 1963, no. 2, pp. 45-6.
 'Monnaies provenant du site de Colophon', *Rev. suisse de num.* xlii (1962/63), 5-13.
 'On the weights of ancient coins', *N. Circ.*, June 1963, p. 116.
 Review of Anne S. Robertson, *Roman Imperial Coins in the Hunter Coin Cabinet*, *University of Glasgow*, i, *Augustus to Nerva*, in *JRS* liii (1963), 176-9.
 'Hoards, small change and the origin of coinage', *JHS* lxxxiv (1964), 76-91.
 'Kunstwerke der Antike: Sammlung Robert Käppeli, Basel', *SM* xiii-xiv, Heft 55 (Aug. 1964), 135-6.
 'The Melos hoard of 1907 re-examined', *NC* iv (1964), 1-20.
 'Zu einigen stempelgleichen Tetradrachmen aus Panormos', *SM* xiii-xiv, Hefte 51/54 (1964), 61-5.
 Review of Alfred R. Bellinger and Marjorie Alkins Berlincourt, *Victory as a coin type*, in *Class. Rev.* xiv. 2 (June 1964), 206-7.
 'Notes on the early imperial tetradrachms of Syria', *Rev. Num.* vii (1965), 58-68.
The coinage of Abdera, 540-345 B.C., by J. M. F. May (ed. with G. K. Jenkins), RNS Special Publication, 3 (London, 1966).

- Greek Coins* (photographs by M. Hirmer) (London, 1966).
- Essays in Greek coinage presented to Stanley Robinson* (ed. with G. K. Jenkins) (Oxford, 1967).
- 'An interpretation of *Ath. Pol.* ch. 10', in *Essays in Greek coinage presented to Stanley Robinson* (1967), 1-9.
- 'Gli stateri a doppio rilievo di Posidonia', *Atti e Memorie della Soc. Magna Grecia*, viii (1967), 113-35.
- Historical sketch, in Norman Davis, *Greek Coins and Cities* (1967), 203-12.
- 'Mainland Greece and Asia Minor', in *A Survey of Numismatic Research 1960-1965*, i, *Ancient Numismatics* (International Numismatic Commission, 1967), 35-53.
- Review of J. P. Barron, *The silver coins of Samos*, in *JHS* lxxxvii (1967), 196-7.
- Review of S. C. Langher, *Contributo alla Storia della Antica Moneta Bronzea*, in *Class. Rev.* xvii. 2 (June 1967), 210-12.
- Coins of ancient Athens*, Minerva Numismatic Handbooks, 2 (Newcastle upon Tyne, 1968).
- 'The coins from the excavation of an early Neronian pottery kiln and workshop at Trent Vale, Stoke on Trent', *N. Staffs. Journ. of Field Studies*, viii (1968), 36-7.
- 'Two 5th century hoards from the Near East' (with P. R. S. Moorey), *Rev. Num.* x (1968), 181-235.
- Greek coins and history: some current problems* (London, 1969).
- Sylloge Nummorum Graecorum*, v, pt. II, *Italy, Sicily, Carthage* (London, 1969).
- 'Fifth century overstrikes at Rhegium and Messina', *Atti del I. Convegno del Centro Internazionale di Studi Numismatici*, April 1967, *Annali*, xii-xiv (1969), 141-50.
- 'Notes on the mint of Side in the 5th century B.C.', *NC* ix (1969), 16-20.
- 'A note on the Carosino and Ionian shore hoards', *ANSMN* 16 (1970), 23-30.
- 'Two late fifth century hoards from S. Italy', *Rev. suisse de num.* li (1970), 47-72.
- Reprint of J. G. Milne, *University of Oxford, Ashmolean Museum, Catalogue of Alexandrian Coins*, with supplement by C. M. Kraay (London).
- 'The archaic coinage of Himera', *Annali*, xvi-xvii, supplement 1971, 3-13.
- The Heberden Coin Room: origin and development* (with C. H. V. Sutherland) (Oxford, 1972).
- 'The Demareteion reconsidered: a reply', *NC* xii (1972), 13-24.
- Review of Joan E. Fisher, *Sylloge Nummorum Graecorum: the Collection of the American Numismatic Society*, pt. i, *Etruria to Calabria*, in *Class. Rev.*, Mar. 1972, p. 141.
- The Hellenistic Kingdoms: portrait coins and history* (with N. Davis) (London, 1973).
- An inventory of Greek coin hoards* (ed. with M. Thompson and O. Mørkholm), International Numismatic Commission (New York, 1973).
- Catalogue of coins of the Roman Empire in the Ashmolean Museum* (with C. H. V. Sutherland), pt. I, *Augustus (c.31 B.C.-A.D. 14)* (Oxford, 1975).
- 'Archaic owls of Athens: new evidence for chronology', *Miscellanea Graeca*, fasc. 1: Thorikos and the Laurion in archaic and classical times (1975), 145-60.
- Sylloge Nummorum Graecorum*, v, pt. III (with D. Nash), *Macedonia* (London, 1976).
- Archaic and classical Greek coins* (London, 1976).
- 'The coinage of Nicopolis', *NC* xvi (1976), 235-47.
- 'Timoleon and Corinthian coinage in Sicily', *Actes du 8^{ème} congrès international de numismatique*, New York/Washington, 1973, Association internationale de numismates professionnels, Publication no. 4 (1976), 99-105.

- 'The Asyut hoard: some comments on chronology', *NC* xvii (1977), 189-98.
- 'The earliest issues of Ambracia', *Quad Tic.* vi (1977), 35-52.
- 'An inventory of Greek coin hoards: a discussion' (with M. Thompson and O. Mørkholm), *Annali*, xxiii-xxiv (1976/1977), 319-23.
- 'Sicilian numismatic chronology: a reply to Professor Chantraine', *Hamburger Beiträge zur Numismatik*, xxiv-xxvi (1970/72, publ. 1977), 211-14.
- Review of M. J. Price and N. Waggoner, *Archaic Greek coinage: the Asyut hoard*, in *JHS* xcvi (1977), 230-1.
- Review of L. Weidauer, *Probleme der frühen Elektronprägung*, in *Class. Rev.* xxvii. 2 (Nov. 1977), 255-6.
- Scripta Nummaria Romana: Essays presented to Humphrey Sutherland* (ed. with R. A. G. Carson (London, 1978)).
- 'The Bronze coinage of Vespasian: classification and attribution', *ibid.* 47-57.
- 'The chronology of Caulonia: once again', *Annali*, xxv (1978), 9-21.
- 'Some notes on the Abu Shusheh "hoard"', *Israel Exploration Journ.*, xxviii (1978), 190-2.
- 'The bronze coinage of Himera and "Himera"', *Annali*, xxv, supplement (1979), 27-52.
- 'The coinage of Ambracia and the preliminaries of the Peloponnesian War', *Quad. Tic.* viii (1979), 37-66.
- 'A hoard of Corinth and Leucas from N.W. Greece', *Coin Hoards*, v (1979), 19-33.
- 'The Isparta Hoard', in *Numismatics and Archaeology: Essays in Honour of Margaret Thompson* (1979), 131-7.
- 'Sovana, Italy 1885 (IGCH 2041)', *Coin Hoards*, v (1979), 34.
- 'Jewish friends and allies of Rome', *ANSMN* 25 (1980), 53-7.
- 'Notes on the Courtauld Collection of Greek coins at the University of Zimbabwe', *Proc. of African Class. Assoc.* xv (1980), 59-61.
- Sylloge Nummorum Graecorum*, v, pt. IV, *Paeonia-Thessaly* (London, 1981).
- 'A Black Sea hoard of the late 5th century B.C.' (with P. R. S. Moorey), *NC* cxli (1981), 1-19.