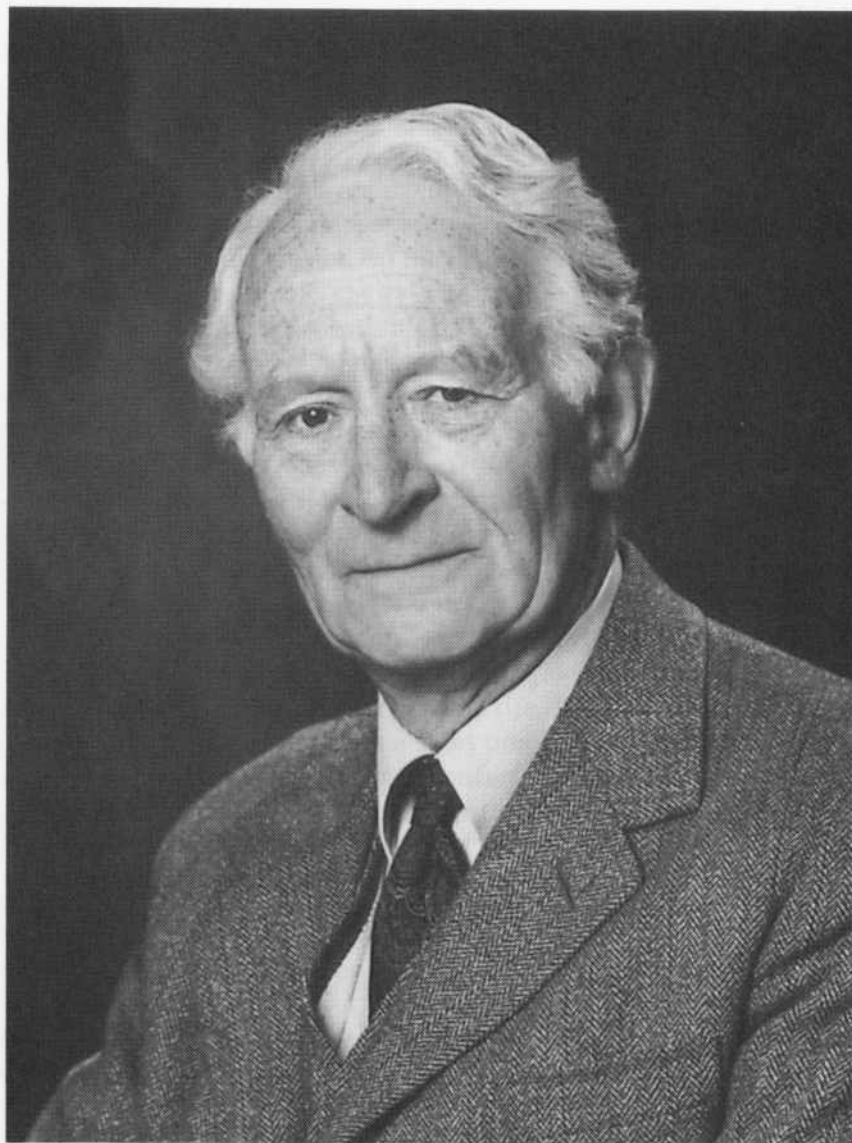


provide the final, revised version or to submit it for publication. He died on 11 June 1992.



KENNETH ST JOSEPH

Ramsey & Muspratt

John Kenneth Sinclair St Joseph 1912–1994

KENNETH ST JOSEPH devoted thirty-five years of his life to the previously unrecognised field of academic aerial photography — that is, to obtaining air-photographs for purposes of teaching and research in a wide range of disciplines. He was himself a geologist by training, and an enthusiastic field archaeologist by inclination, but significant work was achieved in other fields as well, such as civil engineering, plant ecology, plant pathology and soil science, by fruitful collaboration with colleagues working in those areas. He was a fervent advocate of multidisciplinary reconnaissance: the more subjects in which an air-photographer was involved, the less time was likely to be wasted in unprofitable flying and the fewer opportunities for worthwhile photography were going to be missed. He will nevertheless be remembered principally for his contribution, which was truly prodigious, to archaeology (and, through archaeology, history) in Britain and abroad.

St Joseph was born at Cookley in Worcestershire on 13 November 1912, was educated at Bromsgrove School and went up to Selwyn College, Cambridge, in 1931. He achieved a First in the Natural Sciences Tripos in 1934, specialising in geology, and was awarded a Harkness Scholarship. His doctoral research on Silurian Brachiopoda was supported by further awards and culminated in a dissertation on the Pentameracea of Southern Norway, for which he was awarded his Ph.D. in 1937 at the age of twenty-four. In the same year he was elected FGS and appointed Demonstrator in the Department of Geology at Cambridge.

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By then his reputation as an energetic archaeological explorer was becoming well established and his interest in aerial photography as a means of such exploration had been aroused.

According to O. T. Jones, who was Woodwardian Professor of Geology when he was an undergraduate, St Joseph's interest in Roman Britain had been kindled while still at school. Certainly, it is true that St Joseph's uncle Sir William Marris, who was Principal of Armstrong College in the University of Durham (later to become the University of Newcastle-upon-Tyne), was already making enquiries in the summer of 1931 whether Kenneth could take part in the College's excavations on Hadrian's Wall. This came to fruition the following summer, when arrangements were made for St Joseph both to work at Housesteads and to join Gerald Simpson's excavations at Birdoswald. There, if not before, he met Ian Richmond, who was to be a lifelong friend and associate.

Before long St Joseph had embarked on a programme of tracing the Roman roads that led north from the Wall and of examining any Roman military remains that might be associated with them. By the summer of 1933 he had become engaged in a frequent correspondence with O. G. S. Crawford that continued for the next twelve years, and in that same year Crawford made available to him prints of air-photographs of the Otterburn Ranges taken in 1929 that he had just found in the photo section of an RAF station. St Joseph identified on these photographs three previously unrecorded Roman camps, which Richmond and his colleagues examined on the ground and confirmed as genuine. On 25 August 1937 Crawford wrote to St Joseph: 'As regards the compiler of the new edition of the Map of Roman Britain, with particular reference to the Border, Sheet 1 of the quarter-inch, I think you are the person to do the job.' Thereafter, Crawford consulted him not only about specific sites, but often about technical details of cartographic representation.

The North did not monopolise St Joseph's energies, however. He joined his fellow geologist, Frank Shotton, in emergency excavation of two Roman forts at Metchley (Warwicks) in 1934–6; undertook exploratory excavation at Brancaster (Norfolk) in 1935 to confirm the plan and Roman date of the fort there; and, with H. R. Hodgkinson, directed work in 1938–9 at Dodderhill Roman fort, near Droitwich (Worcs), which traced nearly half of its defensive circuit.

In June 1939 occurred an event that might be thought fundamental to his whole subsequent career. Crawford had arranged five days of aerial reconnaissance in southern Scotland with C. G. M. Alington in a

Puss Moth and for two of those days he made the aircraft available to St Joseph. This practical experience of airborne exploration, as St Joseph later recalled, had fired his imagination, and it evidently remained much in his thoughts throughout the War years.

He was actually planning a visit to Water Newton (then Hunts, now Cambs), to make preparations for an excavation at the Roman fort discovered there by aerial photography, when war was declared. It was presumably no accident that he was eventually posted to the Operational Research Section (Bomber Command) of the Ministry of Aircraft Production at RAF High Wycombe, where a major part of his duties was to analyse the effectiveness of bombing missions by studying air-photographs taken during the actual raids. The raids were mostly made at night and he developed special expertise in the interpretation of the resulting night-time photography.

When not engaged in his military duties, St Joseph continued to correspond with Crawford about the Map of Roman Britain and with others about his plans for aerial reconnaissance after the War. It looks as though he may have got himself into the air over Britain whenever he could arrange it, though these trips would not necessarily have been official. He only admitted to a few hours flying over south Perthshire in the late summer of 1944, but Crawford reported observations St Joseph had made at a number of Scottish sites in September 1943, and St Joseph also enlisted the aid of various serving officers in obtaining air-photographs of known archaeological sites. Richmond was able to report to him in 1942 some of the observations made by Fl/Lt E. Bradley when flying from Perth.

In 1944 St Joseph took part in a film about the workings of the Operational Research Section. This was made partly in England and partly in the Disney studios at Hollywood. At some stage the participants were treated to a lunch with the stars. St Joseph found himself seated next to Greta Garbo: questioned about his work, and the reason for his being in Hollywood, he spoke about his interest in aerial photography and then enquired, 'And may I ask what you do?'

Back in England, Richmond, as convenor of the newly formed Council for British Archaeology's Air-Photography Sub-Committee, had put together a paper on 'Air-photography in archaeology as an instrument in post-war research', of which a revised version was submitted to the Air Ministry the following year. St Joseph himself gave a lecture to the Royal Geographical Society in December 1944 on

'Air photography and archaeology', which concluded by putting this same topic on the academic agenda.

The CBA's paper, in its final form, included the following arguments:

In archaeology, observation from the air by skilled observers at all seasons of the year is one of the most fruitful sources of new discoveries, but the technique of archaeological observation has its own particular features. It is therefore suggested as a matter for consideration whether reconnaissance flights by observers who possess the double qualification of having a knowledge of archaeology and being in government employment, subject to security regulations, would in any future circumstances be possible. The proposal is made in this form because it is recognised that the use of Royal Air Force machines by non-official civilian observers might present difficulties. . . .

On the other hand, there may be circumstances in which the concession of the privilege of observation from non-operational aircraft to non-official scientific workers might properly be contemplated.

The year 1945 was a time of new beginnings. St Joseph returned to Cambridge as University Lecturer in Geology and to Selwyn as Tutor. He also married Daphne March, who had read medieval French at Oxford before the War and whom he had known since 1920, when they were both children. He was now thirty-two.

This, too, was the year in which he embarked on the programme of airborne photographic reconnaissance that was to occupy him until his retirement in 1980. For this work an RAF aircraft and pilot were made available for a limited period each year by the Air Ministry, much as suggested by the CBA earlier in the year, thanks especially to the interest of Air Marshal Sir James Robb. Officially, the flights were treated as navigation exercises. In 1945 the pilot allotted was Fl/Lt Derrick Riley, who had himself become attracted to archaeological reconnaissance while a flying instructor near Oxford and who had been in correspondence with St Joseph since 1943. All of the flying was done in the summer, but built up from a total of ten days in 1945 to one of twenty-eight days in 1948.

By this time St Joseph's air-photographs had begun to attract considerable interest amongst certain colleagues at Cambridge and elsewhere. An initiative by the Faculties of Geography and Geology and of History (with the concurrence of Archaeology and Anthropology) led to the University appointing him as Curator in Aerial Photography in 1948. Official status brought with it special accommodation (two small rooms in the Museum of Classical Archaeology) for the

growing collection (currently 6,600 photographs). At the same time it introduced the need for a formal agreement between the University and the Air Ministry: in future, photographs taken from RAF aircraft would be in Crown Copyright and be held by the University on permanent loan. (Since the flights made in 1945–8 had never been officially recognised, St Joseph successfully argued that it was unthinkable that such flights could have been made without the knowledge of the Ministry and so the earlier photographs must be deemed not to exist — for all that they had been processed and printed in RAF darkrooms!)

Air Ministry support continued in principle until 1963, but, with progressive withdrawal from service of light aircraft suitable for such work, by 1957 photographic flights had already become much more difficult to arrange. From 1959 increasing use was made of an Auster hired from Marshall's Flying Services Ltd at Cambridge Airport, but the future looked uncertain. Uncertainty was then dispelled by a grant of £30,000 from the Nuffield Foundation given in 1960 to ensure that flying could continue over the next five years.

This benefaction encouraged more positive planning for the future: in 1962 St Joseph was appointed Director in Aerial Photography; the Auster previously hired was purchased by the University; and a pilot was appointed as a permanent member of staff. For the first time an aircraft would be available for photography whenever the weather was suitable, and flights could be made at only an hour or two's notice. Nothing indicates more clearly that St Joseph's aerial work was entering a new and more active phase than the fact that he now relinquished his College posts as Tutor, Dean and Librarian, though he remained a Fellow until his death and became Vice-Master from 1974 to 1980.

Further developments were not long delayed. For many scientific purposes the prime need was not for oblique photographs taken with a handheld camera through the aircraft's open window, however sensitively timed and angled, but for systematic survey at predetermined scales by means of overlapping runs of vertical photography. Aerial survey in this manner had indeed been possible after a fashion from the Auster, but an aircraft of this type was simply too small to carry an up-to-date precision survey camera. Accordingly, in 1965 a Cessna 337 Super Skymaster was purchased as a replacement, together with a Wild RC8 survey camera.

The twin-engined Cessna greatly enlarged the capability of the University's air-photography unit. Not only could it carry the extra weight; its cruising speed was higher than that of the Auster and it

had a greater range. This meant that longer hours could be worked without landing to refuel, and that photography could continue later in the day in parts of the country distant from Cambridge, while still leaving time to return before nightfall. When we remember that the recognition and photography from the air of archaeological and geological features surviving in slight relief depend on seeing them lit by the sun when it is low in the sky, we can readily perceive what new opportunities were being opened up for such reconnaissance. St Joseph was now able to explore large parts of northern England, Wales and the South-West effectively for archaeological earthworks virtually for the first time.

From this point the numbers of hours flown and photographs taken in the year make a spectacular leap upwards — thanks also in part to the simultaneous appointment of an assistant to share his flying and other duties. From 1966 half the flights each year were made by his assistant, but the long summer flights looking for archaeological crop-marks were nearly all undertaken by himself.

The growth of the Aerial Photography empire, small though it was, evoked considerable admiration amongst his contemporaries in the University, though not all of it good-natured. St Joseph had a well-honed facility for implying more than he had actually said, and this was bound to lead to alternative and contrasting reactions, according as the listener was disposed to believe or disbelieve such utterances. The truth, as so often, lay somewhere in between these extremes; and his achievements, especially in the discovery of archaeological sites over a range of periods from Neolithic to Industrial, were remarkable enough.

In 1945, when this work effectively began, most of the country had never been systematically explored from the air. Wessex, the Oxford Region and the Fens were the exceptions; other areas had either never been examined or else had received only very occasional attention. It is small wonder that his early years were productive of major discoveries, to which the drought year of 1949 made a massive contribution. Even if in such a year it might be said that he could hardly miss, he should be given the credit for having contrived to be in the air with a camera to record the remarkable effects of parching on crops and pasture, many of which have not been seen to such good effect ever since. From 10 June to 28 July 1949 he went into the air every day that the weather was fit and the RAF aircraft serviceable, putting in nearly 154 hours in thirty-five days of flying.

The measure of his flair as an aerial photographer is that he

continued to make important archaeological discoveries, year in and year out, for another thirty years after that. He had a keen eye and a sensitive appreciation of the lie of the land. Above all, he had an indefatigable tenacity of purpose that took him again and again even to well-known sites until they had yielded new secrets.

His primary field of interest was the Roman military occupation of Scotland and in later years he regularly spent at least one period of about a week in late July based at Perth (Scone) that ensured a thorough re-examination of all relevant areas. This is not to say, however, that pre-Roman and post-Roman remains were neglected, nor indeed land-forms, vegetation, land use and settlement, both past and present; nor again, Wales and England.

The effect of his work on our knowledge of Roman Britain can perhaps most dramatically be illustrated by statistics gathered by Professor Sheppard Frere from the 1931, 1956 and 1978 editions of the Ordnance Survey *Map of Roman Britain*. See Table 1.

A very large part of these new discoveries was the work of St Joseph (departmental records attest the discovery of 40 garrison forts and over 185 temporary camps on flights from Cambridge during the period 1945–90), and their contribution is fundamental to the growth of our understanding of the political and military history of Britain in the Roman period—not least in relation to vexed questions concerning the Agricolan and Severan advances into Scotland.

No less fundamental was his contribution to study of the sites of medieval settlement. It happened that in 1948 he and Maurice Beresford independently and quite unknown to each other discovered that groups of earthworks like those beginning to be recognised as the remains of deserted medieval villages in the English Midlands were also to be seen in Yorkshire. St Joseph from the air and Beresford on the ground then began a search of all the English counties for further examples. They did not meet or know of each other's work for several years; once they did, they soon agreed to collaborate on a book. *Medieval England: an*

Table 1

	WALES		NORTHERN BRITAIN	
	Forts	Camps	Forts	Camps
1931 ed.	29	2	21	26
1956 ed.	29	4	45	51
1978 ed.	56	38	61	127

aerial survey (CUP, 1958; 2nd edn. 1979) brought together medieval documents and the aerial view of surviving earthworks in a way that had never been attempted on this scale before and introduced into medieval studies a radically new perspective.

It is difficult now to remember that in the 1940s the physical remains of deserted villages were not indeed unknown, but were seen as isolated curiosities, much as the remains of post-medieval gardens were still regarded thirty years later. Today, the Cambridge University Collection contains air-photographs of more than a thousand deserted and shrunken villages marked by such earthworks in Britain, not to mention a good few others in Ireland.

Scarcely less significant was St Joseph's contribution to prehistoric and early medieval studies.

The major surviving ceremonial and defensive enclosures, such as henges and hillforts, and boundary dykes had long attracted archaeological interest, including aerial photography, but now much more comprehensive and representative coverage was obtained, and photography in favourable lighting often revealed new details not previously observed. Furthermore, new examples were discovered, even of earthworks the size of the Nunwick henge (N Yorks) still surviving in appreciable relief, yet till then unrecognised.

The addition of many further discoveries by means of soil- or crop-marks, on sites where all surface relief had been obliterated, greatly extended the known distribution and morphological diversity of such monuments. This was especially striking in the case of cursuses, those elongated neolithic enclosures of still uncertain purpose. (St Joseph himself liked to use the correct Latin plural *cursus*, but you would expect that form to imply acceptance of the Latin meaning of 'race track' which the eighteenth-century antiquary Stukeley had in mind when he coined the term.) Cursuses had been recognised as a local crop-mark feature of the Thames gravels already in the 1930s; the new work extended their distribution throughout the English Midlands and northwards into Yorkshire, where a local variety achieved a notable concentration at Rudston (now Humberside). Crop-marks could also reveal significant stratigraphic relationships, as at Thornborough (N Yorks), where a cursus could be seen to underlie the middle one of a line of three large surviving henges.

Not all of the crop-mark discoveries conformed to known archaeological types, and this could engender uncertainty or confusion in the initial interpretation. An outstanding example was provided by the

Northumbrian royal vills revealed by crop-marks at Milfield and Yeavinger in 1948–9 and first published (in collaboration with David Knowles) in *Monastic Sites from the Air* (CUP, 1952). These were later matched by Sprouston (Roxburghs) in 1970, and by similar residences in other early kingdoms to south and west, but when first discovered, although they could be seen to be settlements of importance, it took excavation by Dr Brian Hope-Taylor to identify their context. Much the same was true of the neolithic stockaded enclosures with projecting stockaded entrances that turned up on a handful of sites in Scotland and Wales. Assumed ceremonial monuments, by contrast, as indicated by crop-marks of pits in a variety of rectilinear, circular and other formations, have mostly not yet received ground examination, though the ‘avenue’ at East Tanfield (N Yorks) is laid out in such a way as clearly to imply an association of some kind with one of the Thornborough henges.

Despite the spectacular nature of such discoveries, the greatest value for landscape archaeology is attached to his widespread recording of innumerable examples of lesser settlements, farmsteads and fields, both in terms of soil- and crop-marks and in terms of walls and earthworks. On unimproved moorland, aerial reconnaissance in favourable lighting is the most rapid and effective method of locating surviving remains of this kind, while aerial photography provides an immediate and extensive record. In areas of arable farming, observation and photography from the air remain by far the most informative way to detect and record detailed plans of buried archaeological remains whose surface features have been levelled by the action of the plough. Important though the major archaeological monuments quite obviously are, it is the ubiquitous minor remains of settlement, agriculture and industry that provide their background and context, as they once provided the livelihood that supported them.

Today, archaeological reconnaissance from the air, with its particular methods and its corpus of discoveries, has become commonplace, constrained simply by the vagaries of the weather and by lack of adequate funding. In the 1940s both aviation and photography were quite primitive by modern standards, and St Joseph was a real pioneer. He has himself described the situation at the time of his earliest flights. ‘In 1939, there was no airborne radio for light aircraft, no air traffic control outside the vicinity of airfields, and in Scotland there were then few airfields, no blocks of controlled airspace, few military danger areas, and only the beginnings of a meteorological service, as now

understood.¹ Available cameras were obsolescent wartime equipment (St Joseph continued to use the heavy Williamson F24, with its 5" × 5" format, until September 1974), and light meters were unknown.

St Joseph was virtually alone in this field until the late 1950s, and it was not until the 1970s that regional reconnaissance by local fliers became at all general. He thus, virtually single-handed, developed archaeological reconnaissance in Britain and established it in the form that we know today. Furthermore, until the creation of an Air Photographs Unit at the English National Monuments Record in 1965, the Cambridge University Collection of Air Photographs was the only archive of archaeological air-photographs in the country available for consultation, apart from the Aerofilms Library which contained photographs suited rather for journalistic purposes. By that time the Collection contained nearly 98,000 photographs, all taken by St Joseph in the previous twenty-one years, though this total included those of geographical, geological, botanical and zoological interest in addition to the archaeological material reviewed in the preceding paragraphs.

St Joseph's standing as an aerial archaeologist (to use the modern term) was well appreciated outside Britain. Summary reports of his exploration of the remains of the Roman period, both military and civilian, had appeared in a series of articles in the *Journal of Roman Studies* since 1951. Publication of *A Matter of Time* by the Royal Commission on Historical Monuments (England) in 1960 helped to make known the quantity and quality of his work in the prehistoric field, even though it did not include the remarkable results of 1959 — another year of drought whose effects, conveniently, tended to be felt in different areas from those most affected in 1949. The methods which could be seen to have worked so splendidly in Britain must surely be capable of achieving similar results at least in the nearer parts of France; and with the support of H. Seyrig and Professor E. Will permission was obtained from the French Ministry of the Interior to undertake a short programme of work, which was partly funded by the Academy.

Nine days were spent in June 1961 based near Lille: the river gravels yielded good crop-marks as expected, but the chalklands, being blanketed with *limon* soils over a metre thick, were unresponsive. (Roger Agache's remarkable results in the same area in later years were a consequence of the widespread practice of deep ploughing, which

¹*Glasgow Archaeol. Journ.*, 4 (1976), 2

brought to the surface lines of chalk blocks derived from the foundations of Roman structures.) A tiresome feature of the French operation was the insistence of the authorities that all exposed film should be processed and scrutinised in France before leaving the country. The necessary arrangements were made to comply with this stipulation, but if carried out to the letter, they would have delayed final departure by a matter of days. On the final day, therefore, it was conveniently forgotten that there was still exposed film in the magazine attached to the camera, and for years afterwards this uncensored film was treated as top secret.

A longer and more significant programme of flying was initiated in Ireland in 1963. Arrangements were made through the National Museum of Antiquities in Dublin, but the work was (as usual) multi-disciplinary. Both Government and university departments were notified of the impending arrival of the Cambridge aircraft and invited to submit projects, which required photographs of agricultural, geological and historical interest, not to mention a general survey of Irish light-houses.

Lord Headfort, himself an aviator, took a keen interest in the arrangements and invited St Joseph to base himself at Headfort House, near Kells (co Meath), where he had a private landing-strip. This hospitality was kind, but none too helpful when it came to carrying out a practical flying programme. Before take-off it was essential to make two separate telephone calls to Dublin, to obtain a weather forecast and to file a flight plan. At that time it could take up to forty minutes to get a line to Dublin from Kells, so half a morning would go by before any work could begin. In subsequent years the aircraft was hangared at Iona Airways on Dublin Airport, where the pace of life was appreciably quicker.

Ireland offered extraordinary opportunities for photography of scenery, glacial geology, peat bogs, prehistoric and medieval earthworks, abbeys, castles and modern settlement, all (except the last) existing in great profusion. Such subjects, although abundant, were in a sense already known; what was less certain was if the areas of arable farming would yield crop-marks like those in France and Britain. This, in fact, they did: sometimes the marks traced out plans of earthworks already recorded on Ordnance Survey maps but since lost, and sometimes they revealed monuments previously unknown or added new details to what was known before. Of particular interest was the recognition that a circular precinct was a regular (not just an occasional) feature of Early Christian monasteries, sometimes preserved in

the traditional field-pattern, sometimes to be seen as an upstanding earthwork, and sometimes indicated by crop-marks of an associated ditch.

Photographs taken during the 1960s have proved to be especially valuable for showing surviving stone forts (cashels) in the context of the traditional fields, for much rationalisation of field boundaries has since taken place, leaving the forts themselves as islands of archaeological preservation in a featureless sea of modern farming.

Highlights of the work were published, in collaboration with Edward Norman, in *The Early Development of Irish Society: the evidence of aerial photographs* (CUP, 1969). Annual visits continued to be made until 1971; the worsening political situation in the northern province had by then made photographic reconnaissance from relatively low altitudes a good deal less attractive than it had been.

In the meantime an invitation had been received from Professor Ole Klindt-Jensen at the Institute of Prehistoric Archaeology, Aarhus, to undertake a limited programme of photography of archaeological sites in Denmark. For practical reasons this was limited to Jutland and the southern islands so as to avoid busy airspace around Copenhagen. Work began in 1966 and annual visits continued until 1970, when the Danish archaeologists complained that St Joseph had made too many discoveries and they would never get around to excavating them all! To British ears this seemed a little quaint: fancy thinking that you can excavate every known archaeological site, or that air-photographs are valueless without subsequent excavation. It nevertheless underlined the impact made by the discovery of at least fifty-seven Iron Age settlements in Jutland through observation of crop-marks of the foundations of their timber houses, besides a dozen or so less certain examples. Much work was also done on the morphology of village plans, but in general it proved difficult to make contact with geographers and ecologists who might have put forward projects for photography. The explanation given was that 'in Danish universities the different faculties do not talk to one another'!

As the Danish venture ended, attention was next turned to the Netherlands, where a programme of work was agreed with Dr J. A. Brongers of the Rijksdienst voor het Oudheidkundig Bodemonderzoek and visits were made in 1970, 1972 and 1973. The immediate need was for a vertical survey of an area in West Friesland to record details of its topography before the ground was reshaped in a massive 'reparcellation' programme. Observation of soil-marks in these fields drew atten-

tion to a number of prehistoric sites, allowing examination before their imminent destruction. There was much scope for photography of Quaternary landforms and of many aspects of drainage and land reclamation, but crop-marks in the areas examined proved to be very sparse. While the great natural waterways of the Rhine system must always have been important lines of communication, any early settlement along their banks is masked from aerial view by a great depth of alluvial deposits. Better results might have been expected in the corn-fields of Zeeland along the Belgian border, but this was an area where the smoke from Belgian industry consistently made flying hazardous and photography impossible.

Finally, further visits were made to northern France in 1973 and 1974 in co-operation with the Ministère des Affaires Culturelles and the Directors of archaeology in three of the *circonscriptions*, yielding photographs both of archaeological and of geological interest.

No account of St Joseph's activities would be complete that did not refer to the frequent lectures that he gave up and down the country to archaeological and local history societies, from the Societies of Antiquaries of London and of Scotland to the Histon and Impington Village Society. A number of leading archaeologists have also borne witness to the inspiring effect of lectures that they heard as school-boys when he came to speak at their schools, something he had begun to do during the War.

These lectures could be electrifying affairs, illustrated with a seemingly endless succession of slides of brilliant eye-catching photographs, until suddenly (already having overrun his time by ten minutes or more) he would launch himself into his prepared peroration, in which he adopted the tones of the pulpit to remind his audience that the destruction of archaeological remains was proceeding apace and more reconnaissance was urgently needed, if some record of this threatened heritage was to be salvaged. Unfortunately, as with real sermons, repetition over the years tended to blunt the message.

St Joseph's academic distinction was recognised by a variety of learned bodies and in the national honours. Fellowship of the Geological Society in 1937 has already been mentioned; that of the Society of Antiquaries of London followed in 1944, before his involvement in aerial archaeology; and that of the British Academy in 1978. He received honorary doctorates from Trinity College Dublin (Sc.D.) and from the University of Dundee (LLD) in 1971, in each case reflecting the quality, originality and historical value of his aerial work in their

respective countries. Cambridge gave him a personal chair in Aerial Photographic Studies in 1973 and a Litt.D. in 1976, while the University of Amsterdam marked the European dimension of his work and reputation with an honorary Doctorate in Mathematics and Science in 1982. He was made OBE in 1964, and CBE in 1979. Service on the Ancient Monuments Board for England (1968–84) and the Royal Commission on Historical Monuments (England) (1972–81) made good use of his long experience and his wide and intimate knowledge of the country.

In his private life we left St Joseph newly married in 1945. He and Daphne moved from a crowded flat in Cambridge in 1953 to Histon Manor, a semi-derelict residence with no main services other than water and large but equally neglected grounds, which included a moat and a formal garden. The gradual refurbishment of house and garden gave him the outlet he needed for his physical energy during the greater part of the year when he was not engaged in archaeological fieldwork. There they brought up their four children, two sons and twin daughters.

He was physically tough and very seldom ill. Only once during the eighteen years from 1962 to 1980 did he cry off from going flying because he did not feel up to it. He was nevertheless somewhat disposed to throat infections. It was on one such occasion that, having to telephone the police station and feeling the need to apologise for his voice, he began by croaking, 'I am afraid I am a little hoarse.' The police sergeant, well used to undergraduates and other jokers, responded, 'Come now, sir—you know you cannot be a horse!' He used to tell this story with a perfectly straight face, but with St Joseph you never could know.

There are many, both colleagues and students, who bear witness to his kindness and generosity, yet in his middle years he seemed to the archaeological world at large a somewhat forbidding figure, for he tended to the view that his own photographs were his own responsibility, and he could prove unhelpful to enquirers. Indeed, he was sometimes known to say of some new discovery that 'it was too important for Scheduling' (*sc* as an Ancient Monument), for that, of course, would put it in the public domain. Fortunately, discoveries of this calibre were made sufficiently often to allow older examples to drop off the secret list with only a year or two's delay. In the 1970s, when he himself was in his sixties and had achieved the status of an Institution, he palpably relaxed and mellowed in his attitude.

To his friends, in the meantime, he had always been a lively and

fascinating companion, full of humour and an amusing store of anecdotes, on which we have drawn occasionally in preceding paragraphs. He had indeed a strong sense of mischief, which (although entirely unmalicious) was usually found most entertaining by those least directly affected. Temperamentally, he might be thought to have been something of a 'loner' — this would accord with his solitary expeditions in search of Roman roads and in some respects with the practice of aerial photography. Certainly, in his dealings with the world in general he kept his cards very close to his chest, and the better you knew him, unless you were a genuine intimate, the more you were aware of the Cat that Walked by Himself. That said, he was also very skilled at organising teams of supporters to help him with a variety of tasks, from cleaning out the moat at Histon Manor to digging trenches across the ditch defining a putative Roman camp somewhere in Scotland. And successful aerial photography, even if directed by a single intelligence, still depends on genuine teamwork.

Various of these qualities can be discerned in his seasonal expeditions into Scotland and into Wales to examine on the ground the sites of his aerial discoveries or of likely spots for future discoveries. His regular companion on these occasions was his old friend Richmond, until he died in 1965; but as neither he nor Richmond could drive, a friend with a spacious car (large enough to carry ranging poles) was necessarily co-opted. During the fourteen seasons of excavation at Inchtuthil (Perth), carried out jointly by Richmond and St Joseph every September from 1952 to 1965, much of the Scottish fieldwork was fitted in on Sundays (when the paid workforce had their day off) thanks to the help of Mr Derek Faulkes. Similar exploration in England and Wales involved longer trips, lasting more like a week, with Professor Sheppard Frere commonly providing transport.

Professor Frere has contributed the following reminiscences.

In the late '50s and early '60s I was enlisted to help him in successive surveys in the Midlands, Wales and northern England, often accompanied by Sir Ian Richmond, and later we examined sites in Cornwall. . . .

In Wales our most noticeable achievement was the discovery from the car of the fortlet at Brithdir, recognised simultaneously by all three of us as we passed by in my old Rolls Royce. . . .

Measurements were often confirmed by the digging of small trenches to locate and check the existence of ditches, and he developed an impressive skill in placing them, from clues on the photographs, at exactly the correct spot. Planning was carried out by the use of a prismatic compass, tapes and ranging rods. . . . The accuracy of the work may be assessed by comparing

his plan of the marching-camp at Esgair-perfedd (Powys) (*Journ. Rom. Stud.*, 59 (1969), 125) with that by another hand previously published in *Bull. Bd. Celtic Stud.*, 22 (1968), 274–6.

These field expeditions were sometimes adventurous: at Brithdir we were summarily expelled from the site by the farmer's wife because of the lambing season, and in Pembrokeshire we were pursued up a mountain by an angry farmer who suspected us of being the Water Board intent on placing a new reservoir.

In a life so full of scholarly activity there was all too little time available for commensurate publication. The list of his published writings affords him no mean memorial—it is simply that there was scope (and in some cases an obligation) for so much more.

The results of his aerial reconnaissance received two sorts of publication. First, there were progress reports of various kinds, which took the form of articles in learned journals. We have already referred to the nine papers in the *Journal of Roman Studies* covering his Roman discoveries from 1945 to 1976: these constitute a very substantial contribution to the scholarly literature on Roman Britain. Of particular importance for the developing skills of aerial archaeology were his fifty notes in *Antiquity* sharing the accurate but unexciting title of 'Air reconnaissance: recent results'. Here he had the chance both to make known important recent discoveries and to develop commentary that illustrated topics of technical interest. This was the nearest he ever came to providing a primer of aerial reconnaissance and photographic interpretation. Such a primer is something that he would have been uniquely qualified to write, but he fought shy of the general propositions that a handbook of this kind is bound to contain. An elementary handbook of photographic interpretation for archaeologists was produced within his department (and could hardly have been assembled at that time in any other place), but he was not the author. Other papers in *Antiquity* covered archaeological reconnaissance in Wales and the first expedition to northern France, and he produced a number of more general reviews.

His second outlet resulted from a very early initiative of the Committee for Aerial Photography set up by Cambridge University in 1949 to support and supervise their new Curator. This was to co-operate with the Cambridge University Press in publishing a series of monographs to be known as the Cambridge Air Surveys, intended to show the contribution of aerial photography (and more especially of the Cambridge University Collection) to particular fields of academic study. The

volumes on monastic sites, medieval England, and the early development of Irish society have already been mentioned; that on Roman Britain (in collaboration with S. S. Frere) followed in 1983. Each volume was written by a specialist collaborator in close consultation with St Joseph, who had prime responsibility for the selection of the photographs. Another major initiative of the Committee was to put together a more general book on *The Uses of Air Photography* (1966; 2nd edn. 1977), edited by St Joseph and mainly written by its own members, though four chapters were provided by guest contributors. St Joseph's own chapters, on 'The Scope of Air Photography' and on 'Air Photography and Archaeology' were two of his most authoritative statements in this field.

The books he always hoped he might write were a Cambridge Air Survey on prehistoric Britain (now in advanced preparation by another author) and a text on aerial reconnaissance, in which he would have explained and extolled what he would have called the 'Cambridge method'.

It is when we turn to his fieldwork and excavation that we find more than a little adverse criticism for delayed publication. It is axiomatic that an archaeological excavation which remains unpublished loses most, if not all, of its value. Here the writer of this memoir finds he has a measure of sympathy for St Joseph's position, seeing that he too has an excavation unpublished (but only one) and for the same reason, namely that he is fully engaged in a job whose terms of reference do not include archaeological excavation or allow the time for writing up. It may not be appreciated by St Joseph's critics how much of his time (until retirement in 1980) he actually devoted to aerial photography. To maintain momentum in the cataloguing and indexing of photographs in the University Collection, for instance, he used to take home with him each evening not less than one box of a hundred photographs and these were returned to his staff with comments the following morning. Another man would have organised his time differently, no doubt, but the department of Aerial Photography was in a very real sense his own creation and he did everything in his power to ensure its success and survival.

The early fieldwork on Roman roads and associated structures made an important and substantial contribution to *The Roman Occupation of South-western Scotland* (ed S. N. Miller (Glasgow), 1952). His exploration of Roman military sites discovered from the air, when not limited to surface measurement and the digging of ditch sections, was generally

carried out in collaboration with a Roman specialist, either Richmond (e.g. at Dalswinton and Glenlochar) or Frere (e.g. at Brandon and Longthorpe), who saw to the subsequent publication. The much more prolonged, extensive and scientifically important excavation of the timber-built legionary fortress at Inchtuthil would have been handled in the same way, but for the sudden death of Richmond in 1965, one week after the final season had ended. This left responsibility for publication with St Joseph, something he was in no position to deal with, and the project languished until taken up in 1978 by Miss L. F. Pitts for an Oxford D.Phil. thesis, with St Joseph's ready acquiescence. Publication followed in 1985. Excavation of the Roman fortlet at Gatehouse of Fleet (Kirkcud.) in 1960–1 fell outside the general pattern, being undertaken without a colleague; publication was eventually achieved in 1983.

This left the important Roman fort on Loudoun Hill (Ayrshire), dug for the Ministry of Works in 1946–8 in advance of its total destruction by gravel-digging. The main excavation plans were redrawn in 1965, and the finds report was compiled by Dr A. S. Robertson sometime in the 1970s, but the basic account of the excavation and its results still remained to be written. Whether this was to be included in St Joseph's *magnum opus* on Roman Scotland is unclear, but somewhat academic, given that this too remained incomplete.

As to *Roman Scotland*, what had been done, with some thoroughness, was the preparation of a very great number of drawings to illustrate the plans of Roman military installations as revealed by aerial photography, ground survey and exploratory excavation, together with drawings of ditch-sections; diagrams to present the comparative morphology of different series of marching-camps; maps showing the distribution of sites attributed to a certain period or occurring in a given area; all tailored to the requirements of a text whose final form had been worked out in some detail. Work on assembling these drawings had continued until very close to St Joseph's death but was essentially complete, and the drawings themselves have been placed in the keeping of the National Monuments Record for Scotland. It remains for St Joseph's literary executor, Mr G. S. Maxwell, to see how much of the accompanying text can be assembled for eventual posthumous publication.

There were personal qualities that contributed to the slow progress

of literary endeavour (and here again the present writer cannot but be reminded of his own experience of writing a book at the rate of one chapter a year). St Joseph was a stylistic perfectionist who could not tolerate the imperfections latent in hurried writing. And what was true of written style was even more true of content. He was not content to draw a line and say simply that 'these are the results of my work up to 1980.' He needed to answer unanswered questions, to resolve persistent doubts, and to take account of the latest theories. In this sense he could never have completed *Roman Scotland*, and he certainly continued to make forays into Scotland to do relevant fieldwork not only after retirement, but even after his eightieth birthday. His meticulous concern for detail is exemplified by his approach to proof-reading. He used to claim that he had once corrected an italic to a roman full stop. Or was it the other way round? It hardly matters, as there is no such distinction to be made — that (if you will excuse the expression) is the point.

Retirement in 1980 brought a change, rather than a diminution, of activity, though the pace of life tended to slacken, as greater use was made of the bus from Histon to Cambridge than had been practical before. His presence was still in demand at aerial archaeology conferences, and although he no longer had the opportunity to make photographic flights in Britain, he greatly appreciated the invitations of Herr Otto Braasch to join him on a number of occasions in Germany, on the last of which they ventured together into the newly opened skies of eastern Europe, where the repertoire of crop-marks was found to be intriguingly different from what was familiar in the west. He became much involved in the lengthy debate about the proposed course of a new road across the largest Roman fort in Scotland, at Newstead (Roxburghs), which culminated in a public enquiry. He also had the opportunity with Daphne of taking a series of holidays in Italy, which they explored with great pleasure and characteristic thoroughness.

His death from a heart attack on 11 March 1994 came quite without warning.

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Note. I have to thank Mrs Daphne St Joseph and Professor Sheppard Frere for help in compiling this memoir. Mrs St Joseph kindly made available her husband's correspondence for the years 1931–45, which throws light on his growing awareness of, and interest in, aerial photography at that time.