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**PROFESSOR A.D. TRENDALL
AND HIS BAND
OF CLASSICAL
CRYPTOGRAPHERS**

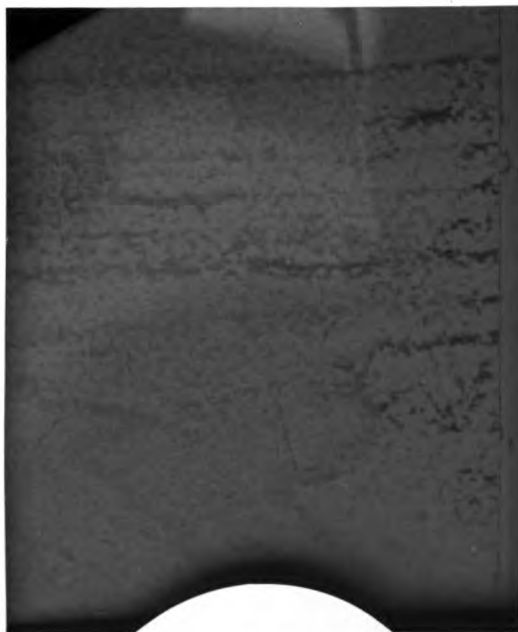
Arthur Dale Trendall

R.S. Merrillees



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Arthur Dale Trendall

Born Auckland, New Zealand, 28 March 1909 and educated at Kings College, Auckland; University of Otago, Dunedin; Trinity College Cambridge, Trendall was a Fellow at Trinity from 1936 until 1940, and the librarian at the British School in Rome from 1936 to 1938.

He was the Professor of Greek and Archaeology at the University of Sydney from 1939 until 1954, and Dean of the Faculty of Arts at that university from 1947 to 1950. He was the acting Vice Chancellor of Sydney University in 1953, and then in 1954 he moved to the Australian National University to be its Deputy Vice Chancellor, as well as the Master of University House.

In 1966 and 1967 he was the Geddes-Harrower Professor of Greek Art and Archaeology at the University of Aberdeen. He returned to Australia and became a resident fellow at La Trobe University from 1969 until his death in 1995.

This is the story of his extra-curricular activities during the Second World War.

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THE AUTHOR

Robert S. Merrillees retired from the Australian Department of Foreign Affairs and Trade, in unusual circumstances, in 1998. An archaeologist by training and a "diplomat" by profession, he graduated from the University of Sydney with honours in archaeology and from the University of London with a doctoral thesis on the trade between Cyprus and Egypt in the Bronze Age. Having joined the Department of External Affairs in 1964, he made his career in the overseas service, with postings to Phnom Penh, New York, Beirut, London, Tel Aviv, Stockholm and Athens, with the usual spells in Canberra. All this time he kept up his archaeological interests and contacts. Having a background in Latin and Greek and a personal acquaintance with Dale Trendall, he wrote, and delivered, while Australian Ambassador to Greece, a lecture on "Greece and the Australian Classical Connection", which mentioned Trendall's wartime experiences. This paper was eventually, and, for want of an Australian editor, thankfully published in *The Annual of the British School at Athens* (Vol. 94, 1999, pp. 457-473). After Trendall's death on 13 November 1995 and the discovery that he had spoken at length to Professor Ball about his role in D Special Intelligence Section, Dr Merrillees decided to pursue his investigations in depth, and this study is the result.

PROFESSOR A.D. TRENDALL AND HIS BAND OF CLASSICAL CRYPTOGRAPHERS

R.S. Merrillees

When Dale Trendall died in Melbourne on 13 November 1995, he was mourned by colleagues, students and friends around the world. Obituaries, tributes and eulogies were pronounced in which recognition of the great impact he had had on classical scholarship and other people's lives, and all added to the sum total of our knowledge of his own career which spanned many decades, countries and roles. To Dr Ian McPhee we owe the most comprehensive account of his life, which was published in the *Proceedings of the British Academy* Vol. 97 (pp.501-517), but not even he could know the full extent of Trendall's professional activities and achievements. Trendall himself wrote nothing about his own career, and the closest he came to setting out his curriculum vitae was the letter of application and testimonials he submitted on 1 August 1939 to the Vice Chancellor of Sydney University for the Chair of Greek. He discouraged investigations by others into his own past, though his power of recall was undimmed by the passage of time, and only towards the end of his life was he prepared to confide in researchers some of the less well documented aspects of his career. One of these was his involvement with D Special Intelligence Section in Melbourne during the Second World War. However, not even this episode could have been more fully written up were it not for the end of the Cold War, the opening of hitherto inaccessible government papers, and the assiduous pursuit of new information by academics, historians and journalists. The whole story can now be told with a reasonable expectation of completeness and accuracy, and some of the details would probably have been unknown even to Trendall himself.

In September 1939, at the outbreak of the Second World War, J. Enoch Powell, Professor of Greek at the University of Sydney, left Australia to return to Britain. He had been in the Chair for just over a year and a half. Subsequent accounts would have us believe that patriotism was the sole motive for his precipitate departure, but the historical record shows otherwise. On 3 May 1939 he had informed the university's Registrar of his acceptance of an invitation from the Vice Chancellor and Court of the University of Durham in England for appointment to the Chair of Greek and Head of the Department of Classics as from 1 January 1940. The next month he submitted his resignation from Sydney University to take effect on 31

December 1939. On 4 September 1939 the Vice-Chancellor, Professor, later Sir, Robert Strachan Wallace, informed the Senate that, in view of the outbreak of war, it seemed likely that Professor Powell would leave for England immediately, and that his resignation from the Chair of Greek would be effective forthwith, instead of as from 31 December 1939. The Vice Chancellor said that Dr A.D. Trendall, Fellow of Trinity College, University of Cambridge, who was a candidate for the Chair of Greek, and who had been visiting his family in New Zealand, had accepted his invitation to come across to Sydney for an interview in connection with his candidature for the Chair. Dr Trendall "had an excellent record, and recommendations in very high terms supporting his candidature for the Chair of Greek had been received. He appeared, also, to have the highest personal qualifications for an appointment to the staff of the University of Sydney. In view of the probable early departure of Professor Powell, the Vice Chancellor said that he would like to retain Dr Trendall at the University of Sydney in view of the likelihood that he would be the most acceptable candidate for appointment to the Chair of Greek and would be able to assist in the Department of Greek in the coming term." It was resolved by the Senate to leave the whole matter in the hands of the Vice Chancellor with the power to act as he saw fit.

Enoch Powell, whom Gough Whitlam has memorably accused of "textual harassment", evidently had little say in the choice of his successor. Trendall was not a candidate for the Chair at the time Powell had applied, and Powell was not formally involved in the process of selecting his successor. Indeed no-one played much of a role except Vice Chancellor Wallace, who was described by Powell in a letter of 6 March 1938 to his parents in England as a "typical Scotchman, but not devoid of the humour which Todd [the Professor of Latin] lacks...I should think him a shrewd judge of character". On 15 August 1939, on a visit to New Zealand, Powell wrote to his parents that "Trendall is in Auckland at present and will return to England by way of Sydney. I hear from the Vice Chancellor that he is desperately anxious to secure my Chair. Wallace and Todd will interview him when he is in Sydney. He is not impossible, but there are others I would prefer: But there is many a more unlikely appointment." The Vice Chancellor had already, on 25 July 1939, invited Trendall to return to Cambridge via Sydney at the university's expense, and Trendall had readily accepted, breaking his journey in Australia from 2 to 6 September. In the event he did not resume his onward journey to England. On 9 October 1939 Wallace informed the Professorial Board of Sydney University that he had cancelled the advertisements in both England and Australia for the Chair of Greek and had offered it to Trendall. The Board noted that Trendall had accepted

the position subject to the concurrence of Trinity College, Cambridge. As this had been promptly forthcoming, Trendall was the same day confirmed as the new Professor of Greek, starting from 1 September 1939, at a salary of 1,250 Australian pounds per annum, and introduced to the Fellows.

Trendall had been in Sydney less than six months before he was approached to join a group of academics acquainting themselves with the theory and techniques of cryptography. By the end of 1939 the Australian Government had become sufficiently concerned at Japanese strategic objectives to take action of its own to become better informed about Tokyo's future intentions. Up till that time a small group under the Director of Naval Intelligence had been liaising with the British Far East Combined Bureau (FECB) to have the official Japanese messages they intercepted, decoded by British and American experts. On 12 December 1939 the Chief of Naval Staff wrote to his opposite numbers in the Air Force and Army proposing the establishment of an Australian cryptographic organisation "with a view to breaking down enemy codes and cyphers". While Air Vice Marshal Goble doubted the value of taking this step, Lieutenant-General Squires thought that Australia should at least have "a nucleus organisation in Australia against the contingencies of operations in and about Australia and her territories", and that since the work was of a highly skilled nature and much practice was necessary, "the sooner a commencement can be made the better". In January 1940, at the latter's instigation, the General Staff (Intelligence) at Eastern Command in Sydney asked two academics from the University of Sydney, Professor T.G. Room, who held the Chair of Mathematics, and Mr R.J. Lyons, a lecturer in Mathematics, to initiate a study of Japanese signals traffic. Shortly thereafter Room invited Trendall to join the informal group, and in his own turn Trendall recruited Mr Athanasius Pryor Treweek, a lecturer in Greek in the same university department. Treweek was the only one of the group who had military rank and knew some Japanese. He had been commissioned in the Field Artillery in 1932 and remained on the active list throughout this decade. Anticipating hostilities with the Japanese, he had taught himself some of their language, but did not follow the courses given by Professor A.L. Sadler, who occupied the Chair of Oriental Studies at the same university.

The omission of Sadler from the group and indeed from all subsequent efforts to read Japanese diplomatic and military messages may at first sight seem surprising, given the fact that Australia at that time had a dearth of people with a fluent knowledge of the language. Sadler, who was Professor from 1922 to 1948, graduated from St John's College, Oxford, in 1908 with

second class honours in Hebrew and Assyrian. In 1909 he went to teach English and Latin in Japan where he acquired his knowledge of the local language. He remained in Japan until his appointment to the Chair of Oriental Studies at Sydney, where he taught Japanese at undergraduate level. He was also Professor of Japanese at the Royal Military College, then in Victoria Barracks, Paddington, from 1931 to 1937. In normal circumstances his qualifications, not to mention his presence in Sydney, should have made him a prime candidate for inclusion in a group of academics teaching themselves how to break and read encoded Japanese messages, and this was indeed recognised by Commander Eric Nave when he met with Professor Room and Major Treweek in Sydney on 2 May 1941. There were, however, reservations about his suitability. The Acting Chief of Naval Staff informed the Chief of General Staff on 15 May 1941 that Sadler had been used for occasional translation work and was the only suitable person known to the Department of the Navy. It had, however, been reported that his wife had some Japanese blood, and would therefore be essential to satisfy themselves that he would be entirely acceptable in these circumstances. Nothing further was heard about the potential security threat posed by Mrs Sadler, an Anglo-Japanese whom he married in Japan in 1916, but on 28 June 1941 the G.O.C. Eastern Command in Sydney informed the Military Board in Melbourne that he was not prepared to propose Professor Sadler's inclusion in the new cryptographic organisation not because "there is anything against the Professor's capabilities or trustworthiness, but a certain hesitancy is felt in recommending him as it is thought he may be inclined to be indiscreet". This is undoubtedly related to his avowed "irreverence and quizzical sense of humour, as he seized with delight on the quirks of persons and events and the telling anecdote".

Room, Lyons, Trendall and Treweek were all newcomers to the field of cryptography though not lacking in the talents deemed necessary for mastering this trade. Trendall claimed that "Training in any language or mathematics is good preparation for work like this. Highly inflected languages teach you a lot about logic and word order, which we don't get in English because we don't conjugate and we don't decline our nouns." Treweek, however, when interviewed about his wartime experiences, was rather dismissive of mathematicians like Room and Lyons, considering that a purely mathematical mind was more of a hindrance than a help in code breaking as it tended to assume that messages were transmitted free of corruption, which was rarely the case, and to look for theoretical rather than practical solutions to the challenge of decryption. In his view the talents of a linguist were better suited to the task, though he argued that

cryptanalysis was impossible without some knowledge of the language involved. Trendall, he said, being a gifted linguist, simply absorbed Japanese "naturally", though he never took any lessons in the language. Nevertheless when the group was progressively taken on by the Australian armed services and transferred to Melbourne, Room and Lyons went with them. It is no less significant that none of these academics was vetted by the authorities for their reliability, and the only form of security clearance to which they were subjected was the rigour of peer group assessment. On this basis, as we have seen, Professor Sadler was excluded as a possible participant, but Room was not, despite Treweek's observation that he was status conscious and given to petulant behaviour. All subsequent recruits to what became Diplomatic or D Special Intelligence Section were admitted on the basis of personal recommendation by existing members of the team, and approval by Trendall, and it was not until early 1943 that formal security vetting procedures were put in place for the special clearance of military and civilian personnel employed in cryptographic work. There is reason to believe that Trendall's advice was still being sought on recruitment to Defence Signals Directorate well after the war was over.

During 1940 and 1941 the Sydney group met informally at weekends in Victoria Barracks on Oxford Street to teach themselves decryption and the breaking of Japanese codes. They had no instructors except themselves, and had even to procure their own training manuals. One of the books they used was *Secret and Urgent: The Story of Codes and Cyphers* by Fletcher Pratt. It was published in London in 1939 and intended for the general reader. Trendall bought his own copy at Dymocks in George Street, but McPhee has not been able to find any trace of this or any other work on cryptography in the library Trendall left behind in his flat at Menzies College in La Trobe University in Melbourne. Drawing on this and more specialised works, the four amateur cryptographers set each other problems and were given the opportunity to test their expertise on coded telegrams sent by the Japanese Consul-General in Sydney to Tokyo and furnished to them by Amalgamated Wireless (Australasia) Ltd (AWA), which had transmitted them and made them available at the behest of Army Intelligence. By October 1940 their military supervisors were able to report that the work of the cipher-breaking group was continuing, that it had been concentrated on an attempt to break Japanese commercial and diplomatic codes by reducing the cipher groups to a Romanised-Japanese text which could then be read by Japanese interpreters, and that "exceedingly good results" were either anticipated or in view. Three definite codes had been identified in use and in the case of one of these it had become apparent that the new code was

brought into operation on 1 October 1940. In the first half of 1941 the group succeeded in breaking one of these codes, known as LA, since every communication began with this syllable. It proved relatively easy to decrypt as it was a simple substitution cypher that was used for low level reporting messages. Treweek claimed credit for breaking this code, describing it a "child's play", but said he could not have done so if he had not known Japanese. The contents of the telegrams they studied was of less importance to the Sydney team than their form of transmission as they were often news reports and did not need to be translated. On one occasion they were given to decrypt the text of a letter employing a dot code which had been intercepted by postal censorship. It turned out to be a steamy love letter sent by a British knight working in China to a married woman living in Melbourne.

The next step in harnessing the expertise of the Sydney group for war-time purposes was taken by Paymaster Commander Eric T. Nave, who had since February 1940 been heading up a small unit under the Director of Naval Intelligence in Victoria Barracks in Melbourne. This unit, which was working in close liaison with British Far East Combined Bureau in Singapore on the breaking of Japanese naval codes, was limited in its range of activities by British unwillingness to provide the cryptographic material that would enable the R.A.N. operation to decipher the diplomatic and consular messages intercepted in Australia. Nave himself was an Australian naval officer who had specialised in the Japanese language and been seconded to the Royal Navy on sigint duties in 1925 as there was no demand at that time for his expertise in the R.A.N. He had spent the next 15 years working on Japanese naval codes in London and at F.E.C.B. listening stations in Hong Kong and Singapore before being transferred to Melbourne because of ill-health. His knowledge and experience made him an obvious choice to develop a Japanese cryptographic facility within the Australian armed forces. It was no doubt at his initiative that the conference was held in Sydney on 2 May 1941 between representatives of the Navy and Army, with Professor Room and Major Treweek in attendance, to consider the future of Australian activity in this highly sensitive but militarily vital arena. After reviewing the efforts of the Sydney University academics, the meeting considered that the breaking of Japanese diplomatic codes could be regarded as a feasible proposition; that it was desirable for a section for this purpose to be organised in Australia since existing facilities in Singapore might not always be available; that the existing Naval nucleus organisation be expanded and include a competent Japanese linguist; and that the new section be of a combined service nature, for the benefit of all the armed forces, though initially the work would mainly be concerned with naval

codes. Room and Treweek indicated their willingness, subject to the concurrence of the Sydney University authorities, to undertake the work, and to go to Melbourne for this purpose. It was thought that Lyons could also be made available if the necessity arose. Following this meeting a request was sent by the Chief of Naval Staff to Army to bring to Melbourne "for secret work" the Sydney University Cipher Section, consisting of Professor Room, Major Treweek and Mr Lyons. It was proposed that these academics be called up for full-time duty in Melbourne, on the pay and allowance of Major. In his minute of 27 May 1941 to G.O.C. Eastern Command in Sydney, the Director of Military Operations and Intelligence in Melbourne also referred to his understanding that Professor Trendall might be available to be called up for part time duty, but to work in Sydney. The same conditions regarding rank and remuneration would in principle apply to Trendall if and when he were engaged.

While the war was raging in Europe, conflict of another kind broke out between the University of Sydney and the Department of the Army over the status and pay to be given the seconded academics. As happens so often and typically in an avowedly egalitarian society, the battle over the equivalent military rank appropriate for the Professors when they joined the Australian Army led not only to lengthy and high level exchanges between Vice Chancellor Wallace and the Government over the issue but to a delay in the secondment of Room as well as Lyons. Following approval on 3 June 1941 by the Minister of the Army, Mr Percy Spender, of a submission from the Chief of the General Staff, steps were initiated to obtain Sydney University's approval for the release of Room, Treweek and Lyons, and the following day Wallace wrote to G.O.C., Eastern Command, in Victoria Barracks, Paddington, agreeing to make them available but on certain conditions. He stated that "in view of the standing of Professor Room in the scientific world, and in view of the financial obligations which the University assumes by releasing him from his duties, the Senate is of the opinion that his rank in the Army should not be lower than that of full Colonel. It is understood that Mr Lyons and Mr Treweek will be given the rank of Major." While there were no problems, hierarchical or logistical, to the immediate transfer of Major Treweek, who took up duty on 19 June with Commander Nave in Melbourne. It was decided that Trendall would for the time being not be required for part time duty in Eastern Command or transferred to Melbourne, and further consideration was given by Army to the status of Room and Lyons. The Director of Military Operations and Intelligence informed Eastern Command on 20 June 1941 of his view that "the relevant value of the work

to be done by these officers (*sic*) has been assessed as that of Major and, if this is not acceptable, it is regretted that we will reluctantly have to forego the services of the Professors named". To break the impasse, Wallace made a direct approach to the Minister for the Army concerning the status and emoluments of Professor Room, arguing that either he should be given rank "in keeping with his standing as a scholar and mathematician" or he should be taken over without Army rank. In his submission to the Minister on 24 July 1941, the Chief of General Staff argued that since the Army could not give Room and Lyons a high military status in keeping with their civilian profession, "the position could be met by employing them on the basis as 'civil experts'". On 31 July Spender so informed the Vice Chancellor of Sydney University. Following further meetings between Wallace, the Minister and Army authorities, agreement was reached on the terms for the release of Room and Lyons in their civilian capacity, and both gentlemen finally reported for duty in Melbourne on Monday, 18 August 1941. It had taken over three months for the formalities of their secondment to be completed. When Trendall's turn came, there was no further discussion of his terms and conditions; they were the same as those of Professor Room, and so he never became a Major or even a Colonel. Unlike Treweek and subsequent recruits to Special Intelligence Section, he was not given an Army number and no file on him could be found in the Central Army Records Office in Victoria Barracks in Melbourne.

The next we hear of Trendall's involvement is in a minute of 3 January 1942 from the Director of Military Intelligence, notifying the Department of the Army that Trendall had offered his services to Special Intelligence Section from 9 January until the beginning of March, that is, during the University summer vacation, on a voluntary basis. No doubt one of the reasons for the delay in Trendall's secondment was the decision at the end of 1941, "owing to the threat to Australia consequent upon Japan's entry to the war...to pack up the original antiquities in the [Nicholson] Museum and store them away in a place of safety". On 12 January Trendall reported for duty in Melbourne to Commander Nave, who as the Naval officer in charge of Special Intelligence Section was responsible to the Chief of the Naval Staff for the work of his organisation. On 19 February 1942 the Deputy Chief of the General Staff told the Department of Army of the defence establishment's view that it would be desirable to secure the continuance of Trendall's services on a full-time basis and that the University of Sydney had agreed to release him on the same terms as approved in the case of Professor Room. On 24 February Trendall wrote from Melbourne to the Vice Chancellor and Registrar of Sydney University

seeking agreement to his leave of absence on national service as from March 1942 and arranging for Professor Todd to take charge of the Greek Department in his absence. He told them that "the work here is beginning to prosper a little and I am quite enjoying it, though it keeps me well on the go most of the time" and that "the present severance from Sydney, albeit I trust very temporary, is far from my liking, but I know you will understand and appreciate the circumstances which have prompted me to stay on here". What had fundamentally altered Australia's strategic outlook and led to Trendall's re-engagement with the cryptographic effort in Melbourne was Japan's entry into the war following the bombing of Pearl Harbour on 7 December 1941. Typically he saw it as his duty to lend a hand to his erstwhile fellow cryptographers, volunteered his services at his own time and expense, and was prepared to accept a longer term commitment than the one originally envisaged. Indeed there is something of a parallel between the way he was detained in Sydney en route back to Cambridge in 1939 and the manner in which he was waylaid in Melbourne at the end of February 1942.

After his arrival in Melbourne Trendall worked in Navy Block at Victoria Barracks on Japanese traffic, both service and diplomatic. On 28 February 1942 he was joined by another recruit, Ronald Sydney Bond, who had just turned 19 and finished his tertiary studies. Bond had been taught classics at Canterbury Boys High School by Treweek and Greek at Sydney University by both Treweek and Trendall, and had graduated in Arts the year before with first class honours in Latin and Greek. Bond was to become Trendall's deputy in Special Intelligence Section and replaced him on Trendall's return to full-time teaching at Sydney University in 1944. After the war he was for 18 years Vice-Principal of Scotch College in Melbourne. On Bond's arrival in Melbourne Trendall arranged for him to be given the rank of Corporal so that he could afford to live in the same boarding house in St Kilda Road. Bond was promoted to Sergeant the same year and became Lieutenant on 13 March 1943. In March 1942 Trendall, Bond and their team moved to a block of flats called "Monterey" fronting Arthur Street between Queens Road and Queens Lane in South Yarra, near Albert Park. There offices were created for Special Intelligence Section, Nave's own Special Intelligence Organisation which was staffed by, amongst others, Room, Treweek and Lyons, and an American unit run by United States Navy to decrypt Japanese naval messages sent by cypher. This outfit, known as FRUMEL (Fleet Radio Unit Melbourne) was headed by Lieutenant Rudolf Fabian and run by personnel who had been evacuated from the Philippines by submarine.

Shortly after the move to "Monterey", Trendall and Bond were joined by a British "consular" officer, Arthur R.V. Cooper, who belonged to the British Government Code and Cypher School and had been evacuated from Singapore by ship together with the wives of two Englishmen who had stayed behind in Singapore. Both women were taken on to the strength of Nave's unit at "Monterey". Cooper was also accompanied by a pet gibbon, which he had smuggled into the country. A Chinese and Icelandic language expert, Cooper was much attached to this animal which he called "Tertius", being the third one he'd had. It went with him always, its long tail hanging down below his jacket, and was described by Trendall as a "highly illegal gibbon". It eventually ended up in Melbourne Zoo. Cooper remained at "Monterey" until December 1942 when he was summoned back to the U.K. and did not return during the rest of the war. The linguistic side of the operation was further reinforced by another two British consular officers evacuated from Singapore, C.H. Archer O.B.E., and Hubert A. Graves M.C. John Charles Davies, another Arts graduate from Sydney University with first class honours in Latin and French, who had been in the same class as Bond at Canterbury Boys High School, joined Special Intelligence Section in May 1942, on Bond's recommendation to Trendall. After only six months working with Trendall and then with Treweek, he was transferred to Central Bureau which General Macarthur was in the process of re-organising in Brisbane. He went on after the war to become Professor of French at the University of Adelaide.

During 1942 four Japanese codes and two ciphers were in use. All four codes and virtually all traffic in the "FUJI" cipher were being read locally and the breaking of the daily keys for "FUJI" was the principal task of Special Intelligence Section at the time. Messages in the machine cypher were sent directly to London where a copy of the "Hinoki" machine was held. One item of the "FUJI" enciphering system changed daily, and another changed three times a month. Sensitive information was entrusted to "FUJI" double encryption, indicated by a repetition of the enciphering key-word at the end of each message. This system was unbreakable if the enciphering key for that particular day were not known. According to Bond, Trendall devised an ingenious way of breaking the daily "FUJI" cipher and sending the result by their own ULTRA communication network to London to arrive in time for the opening of business. This became a daily challenge and a matter of kudos. "FUJI" code, consisting of two letter and four letter groups, was more than 50 per cent known by February 1942 and in the next two years, Special Intelligence Section, London and Washington were able

to fill in many of the remaining gaps. Most Japanese intercepts came from Tokyo, French Indo-China (Hanoi, Saigon and Phnom Penh), Peru and Chile, and some German occupied capitals. Bond recalls that it was from Budapest that the Japanese Ambassador told his Foreign Ministry that the Germans had suggested the Allies were reading his messages, but he assured Tokyo that this was unlikely, if not impossible, because Japanese was such a difficult language. Little did he know that his cable had been seen by Trendall and his team of cryptographers in Melbourne.

Traffic sent in code rarely contained any important information as the Japanese themselves realised that their codes had little security value. Low grade ciphers were chiefly used for messages concerning financial and staffing problems within various embassies, visas, couriers' rations and similar routine matters. Communications in high grade ciphers showed the reactions of the Japanese to naval, military and political events abroad and in addition provided a reliable though general picture of the situation in Japan itself. Posts overseas regularly sent through diplomatic channels reports from their spies and agents. Espionage reports on the European and Russian fronts were frequently received from the Japanese Minister in Stockholm, and Kabul was the nerve centre of a spy organisation throughout India. In 1942 one message from Kabul revealed that a Japanese agent was present at a British naval trial, and was supplying full details of the carriers and battleships stationed in Bombay. Posts in occupied Europe constantly sent detailed accounts of the effectiveness of Allied bombing raids on their respective cities, as well as long reports on local politics. For several months before the Russian entry into the Far Eastern theatre of war, reports were coming through from Japanese couriers via the Vladivostok consulate on the eastward movement of troops and materiel. Many details recovered from Japanese diplomatic messages in cipher were useful to London for the purposes of economic warfare. The British authorities displayed a marked interest in the Japanese need for supplies and commodities, particularly Swedish ball-bearings and Turkish chrome. Up to the end of 1942 shipping information was often sent in diplomatic ciphers but this practice was discontinued. Bond recalls providing details to the RAN and United States Navy on shipping movements out of Saigon and other ports, which the Allied navies were able to use to good and damaging effect.

Where Trendall was personally concerned, one of the most instructive revelations from the decryption of Japanese traffic in 1942 was the discovery in a message from the Japanese representative in Dili that the field communications in cypher between the Australian guerrilla troops in Timor were

being read by the Japanese military. By all accounts the ciphers being used by the Australian forces were not at that time very sophisticated, and Treweek claimed that he had been able to break the Australian cypher in less than an hour. This evidently set the alarm bells ringing in Australian cipher production. With his characteristic flair and initiative, Trendall set about devising a new cipher system for use by the Australian armed forces on deployment, and with a little help from Cooper. "TRENCODE", named after its originator, was born. Described as sufficiently simple to be implemented easily in the field but difficult to break quickly, requiring hours if not days to decipher, "TRENCODE" is said to have remained in use at least until 1946, as it effectively served its purpose of denying the enemy access to operational information at the time when it could be turned to the users' disadvantage. Needless to say, Treweek gave himself the challenge of breaking "TRENCODE", and inevitably succeeded, as Trendall himself acknowledged, though, according to Trendall, it took a long time and Treweek "cheated a bit". After the war Treweek was to put his knowledge and experience to telling scholarly effect when he submitted the decipherment of Mycenaean Linear B by Ventris and Chadwick to critical examination and concluded unequivocally that they were right and their detractors wrong.

During this period Trendall produced the first edition of his "small book" on *The Shellal Mosaic and Other Classical Antiquities in the Australian War Memorial Canberra*. In the preface datelined Sydney University March 1942, he stated that "present circumstances, including the almost complete severance from the learned world of Europe, have made it impossible to check a number of points and to give all the references and parallels desirable", and expressed his gratitude to "my lecturer, Major A.P. Treweek, for much help". Trendall had undertaken to publish the history of this mosaic and its acquisition, following a visit he made in mid-1941 to the War Memorial, where he had helped with its installation. His interest in this unusual war trophy was aroused not only by its archaeological importance but by the involvement of his fellow New Zealand countrymen in the military operation against the Turks in southern Palestine in April 1917 that led to its discovery, and in the subsequent actions taken to clear, record and remove the floor covering which had belonged to a Byzantine church of the 6th century A.D. Trendall also noted, with obvious pleasure in its enlightenment, the fact that when the Australian and New Zealand commanders met in Cairo to decide what was to happen to the relic, "the New Zealanders generously agreed that, as Australians comprised two-thirds of the Anzac Mounted Division, the mosaic should, if possible, go to Australia, on condition that it should be placed in some

central position where visiting New Zealanders would be able to see it". No less importantly, they both consorted to ensure that the British did not lay their hands on it as a war trophy, and after strenuous representations to Whitehall, the mosaic was officially handed over the Australian Government in 1918 and sent back by sea to Australia. After being displayed in its packing case in Melbourne and Sydney, it was transferred to its ultimate destination in Canberra, where it was eventually put on permanent display.

To illustrate the booklet, the services of the well known Melbourne artist, Mr Napier Waller, were engaged, and Trendall visited him, presumably at his home in Ivanhoe, to discuss the best way of reproducing the mosaic in colour. Napier Waller, who was responsible after the war for designing and installing the mosaics and stained glass windows in the Hall of Remembrance of the War Memorial, completed his watercolour drawings of the floor covering in Canberra in December 1941. The canvas originals, mounted on heavy composition boards, were then sent by train to Sydney, where Trendall arranged for them to be turned into blocks for the plates in colour. The volume appeared in mid-1942, twelve months after its inception. In the meantime Major Treweek had gone to the War Memorial in May 1942 to talk about the booklet, and Trendall told the Memorial on 7 June 1942 of the impending visit to Canberra of "Mr H.A. Graves of the British Consular Service, a friend of mine", expressing the hope that he would be granted "all facilities for examining the mosaic, in which he has expressed keen interest". The history of Napier Waller's drawings themselves is not without interest, as becomes evident from a letter which Trendall wrote to the Australian War Memorial on 5 October 1949, seeking clarification of their status. He pointed out that after the blocks had been made, it was agreed by the Acting Director of the Memorial that "the original paintings might remain on exhibition in the Nicholson Museum on what I gathered to be a sort of permanent loan. Accordingly, when the block-makers had finished their work, we had the paintings suitably mounted and framed for display in the Museum." On 28 April 1950 the Memorial decided to recommend to the Minister that Napier Waller's drawings be made available on loan to the Nicholson Museum at the University of Sydney, where they have not been located. Though Nicholas Draffin in his book on *The Art of M. Napier Waller* (South Melbourne 1978) states that during the war years Napier Waller undertook no major commissions (p. 9), he did at least produce three watercolours which Trendall, who was not given to hyperbole, described as "magnificent" and which are works of art in their own right.

In the latter part of 1942 General Macarthur decided to expand Central Bureau to give him the facility he needed to monitor all Japanese military and civilian traffic. As a result of this re-organisation, which came officially into effect on 30 January 1943, Professor Room was transferred to Brisbane in November 1942; Lyons ceased duty with the Australian defence forces on 7 December 1942 and returned to his position at the University of Sydney; and Treweek joined up with FRUMEL in Melbourne. After a tug-of-war between Canberra, London and Washington, Commander Nave moved to Central Bureau in Brisbane. General Macarthur was as formidable a protagonist in the corridors of power as he was on the field of battle. Consideration was also given to moving D Special Intelligence Section to Brisbane, but for a variety of intelligence, logistics and national security reasons neither the Australian Army nor the local and British staff involved wished to see their unit incorporated into Central Bureau or transferred from Melbourne, still less disbanded. The case for retaining Special Intelligence Section intact under Army's auspices was put strongly by the Chief of General Staff to the Chief of Naval Staff and by Archer and Graves to the Foreign Office in London. With General Macarthur's consent, it was finally decided to relocate Special Intelligence Section to A Block in Victoria Barracks, where it was to report to Lieutenant-Colonel Robert Little, Assistant Director of Military Intelligence in Melbourne. On 27 November 1942 Trendall, Bond, Archer and Graves, together with the rest of the section's personnel, military and civilian, commenced duty in their new location. The strain, however, was beginning to tell on the cryptographic team as the volume of high grade intercepts went up from a daily average of six in June to one of fifteen in December 1942. The burden of the decryption effort now fell on Trendall, Bond, Archer and Graves, as Cooper had left for England and the rest of the staff was not equipped to relieve them of the pressure to which they were being increasingly subjected. Both Trendall and Bond, according to Archer, had been working a seven day week, often up to 11 pm, and were only just able to keep abreast of the traffic. Archer, in his letter of 3 January 1943 to Colonel Little, pointed out that "ever since Professor Trendall started to work with us early last year he has to my knowledge never taken a full day's holiday at all. His only breaks have been extremely strenuous business trips to Sydney University, and absences of a few hours when traffic fell exceptionally low. Sergeant Bond has worked the same uninterrupted seven-day week, equally without rest, until his recent period of leave."

Archer was unstinting in his praise of Trendall and Bond, as the following quotation from his letter demonstrates:

It is unquestionable that but for Professor Trendall's exceptional gifts the diplomatic section in Australia would have been scrapped many months ago. Professor Trendall in his turn was fortunate in having by reason of his experience at Sydney University acquired personal knowledge of a few of the likeliest type to be able to help him; and his first choice, Sergeant Bond, turned out by a second rare stroke of luck to possess the 'flair' in an exceptional degree. Professor assures me that Sergeant Bond is now no less expert at this work than he is himself...Moreover...these two [Trendall and Bond], talented though they are, can only cope with the present heavy volume of traffic because they have both through some ten months' experience perfected themselves in a highly specialised technique of their own invention...I am convinced that our only course is to go without delay to the likeliest market, and let Professor Trendall select one more recruit from that small circle of bright young men of whom he has personal experience.

It was in this way that Eric Stephen Barnes came to be inducted into the section. Barnes had been dux of Canterbury Boys High School in 1939 and graduated in Arts from Sydney University with first class honours in French and Mathematics. It was Bond, from the same Sydney school, who sounded Barnes out during his (Bond's) leave in Sydney over the Christmas period in 1942 and recommended him to Trendall, though Bond himself thought it more than likely that Professor Room had also mentioned Barnes' name to Trendall. In any event Barnes joined the section on 18 February 1943 and rose to the rank of Lieutenant in July 1944. After the war Barnes was appointed to the Chair of Pure Mathematics at the University of Adelaide, of which he subsequently became Deputy Vice Chancellor.

On 2 March 1943 Trendall wrote the following letter to the Vice-Chancellor of Sydney University: "My task in Melbourne is now completed and in a few days' time I shall be able to hand things over to the assistants whom I have trained. The authorities here wish me to continue my work in Brisbane or elsewhere in the north, but in the present circumstances they will not be ready for me until June. I should, therefore, very much like to return to the University for the April term, as that would not only give me the complete change of work which I think is a very necessary preliminary to my next job but also the opportunity of dealing with certain departmental and language problems which have arisen during the past fifteen months, while I have been on leave. Such an arrangement would suit all the parties here concerned and would, I hope, not be unacceptable to the University Senate. It would be understood that if, while I was back at the University, conditions

so changed as to make my immediate return to the Army necessary, the University would release me. If, therefore, you are agreeable to my coming back to the University for a term would you be kind enough to send a letter as soon as possible to Lt.-Col. R.A. Little, D.S.O.... asking him to arrange for my return to the University for a term (of about two months) as from March 31st...Our work here has gone very well and I look forward both to a short sojourn at the University and the new work thereafter." Trendall left Melbourne on 13 March 1943 to return to Sydney. It was the same day that Bond was commissioned.

In the event things did not quite work out as Army or Trendall had planned. In any case Trendall's respite from cryptographic activity was to be shortlived. In July 1943 the Japanese changed all their ciphers, and the Allied cryptographers had to start all over again from scratch. Shortly afterwards Trendall was recalled to duty in Melbourne. "FUJI", the only cipher which Special Intelligence Section had been reading, was replaced overnight by what turned out to be a similar system called "BA". The Greater East Asian Ministry introduced its own cipher system named after its acronym "GEAM", and substantial amounts of Japanese traffic was now sent in a numerical code identified by the numbers 10101. Altogether between 1943 and 1945 the Japanese introduced eight new ciphers, two transposition systems and six reciphering tables. Special Intelligence Section was the first to break the Greater East Asian Ministry transposition cipher, and this was followed shortly afterwards by the breaking of the new cipher used by the Foreign Ministry. Approximately 90 per cent of the communications received in these systems was able to be read. There was close co-operation between the Australian and British cryptographic outfits in deciphering the Japanese traffic, but liaison between Special Intelligence Section and FRUMEL was not actively encouraged. Nevertheless Treweek kept discreetly in contact with Trendall and passed on useful bits of information. One of the messages read included the itinerary of a German U-boat bound for the Far East. After duly despatching the mandatory reconnaissance aircraft, the Allies sank the enemy submarine. They also read the ensuing exchange of messages in which the Germans queried the Japanese about their signals security, only to be reassured that it was impregnable.

Trendall continued to be based in Melbourne until the University of Sydney asked Colonel Little in June 1944 to release him to attend to the situation created by the death of Professor Todd. Trendall returned to Sydney from 14 June to 3 August, resumed duty in Melbourne from 3 August to 5 September and returned to the University on 6 September. After

rejoining the Section in Melbourne, Trendall was finally released from the Army on 16 November 1944 in response to a further request from the Vice Chancellor for him to be allowed to return to full-time work in the Classics Departments. During this period three more cryptographers entered the section's ranks in Melbourne. Anthony C. Eastway had been on active duty in Dutch New Guinea before being transferred to Special Intelligence Section at the end of 1943 or early 1944. Ian Haldane Smith came to the unit in May 1944 via Central Bureau, and Kenneth Leslie McKay was recruited in July 1944. All three had attended North Sydney Boys High School and been taught by a brilliant classics master, Mr Gibbs. Eastway and Smith were contemporaries, and McKay a year ahead. It is said that Trendall tried to secure the services of McKay as the same time as those of Bond, but that McKay, after completing his second year of Arts at Sydney University with distinctions in Latin and Greek, had enlisted with an anti-aircraft unit and was not available for other duties until later in the war. He completed his degree after 1945 and eventually became Reader in Classics at the Australian National University in Canberra. After his schooling in Sydney, Smith had accompanied his parents to Melbourne, where he graduated in Arts from the University of Melbourne. After the war he became Professor of Modern Languages at the University of Tasmania. Eastway's career took a different course after attending North Sydney Boys High, as he did not go on to tertiary studies but joined C.S.R., to which he returned after 1945.

Trendall's contribution to the cryptographic work of D Special Intelligence Section was lauded not only by Archer but by the Australian Army authorities and by Commander Nave himself. In his letter of 30 November 1944 to Sir Robert Wallace, the Secretary of the Department of the Army expressed on behalf of the Army "its appreciation of the very valuable service rendered by Professor Trendall to the Allied War effort from the 9th January 1942 to the present time and of your generosity not only in releasing him during that period but also for your present offer to make him available in future, should the Army require him at any time". Nave told David Jenkins, author of *Battle Surface! Japan's Submarine War Against Australia 1942-44* (Sydney 1992) that Trendall, in his opinion, was "the best" of the cryptographers he knew. To his role in the Section Trendall brought outstanding talents. His linguistic qualifications were undisputed. Master of Latin and Greek, he was fluent in several modern languages, notably French, German and Italian, and though he initially had no Japanese, we need not doubt Treweek's observation that Trendall readily picked up what he needed to know for doing his cryptographic work. Though he

did not major in mathematics after his schooling in Auckland, he clearly had a latent strength in this discipline, as is attested by the revealing letter he wrote in honour of the memory of Professor Thomas Dagger Adams, his teacher in Classics at the University of Otago: "It is not easy for me to set down in words the immense debt I owe to T.D. Adams, nor the profound influence he had upon my life. When I came to Dunedin in 1926 as a very immature young student I had thought of pursuing a career in Mathematics, but I have no doubt at all that it was T.D.'s inspiring lectures in Latin, his own deep love of the classics and his belief in their value which, at the end of my first year, induced me to turn to classical studies. Under his enthusiastic guidance I threw myself into the study of Greek, and there followed three years of the greatest joy and satisfaction to me, as a new world opened up before me and one magnificent discovery followed upon another. It was he, too, who first stimulated my interest in classical archaeology, and especially in Greek sculpture and vase-painting, which his own exquisite taste found so congenial."

Encapsulated in this quotation are all the skills which Trendall brought to bear on decrypting Japanese diplomatic communications, including the one quality which put him in a league of his own and was not shared by any of his colleagues. I refer to his already well established reputation as an historian of classical art. The author of several substantial works on South Italian Greek pottery, Trendall had learnt to identify the stylistic differences in the rendition of scenes on ancient Greek vases, to match similar distinguishing features in the designs on various containers, and to attribute these characteristics to the workshops of individual artists, schools and/or regions. The pioneer of this artistic methodology and one of Trendall's examiners for a Fellowship at Trinity College, Cambridge, Professor J.D. Beazley, wrote in August 1939 the following testimonial for Trendall's application for the Chair in Sydney: "He is one of the most promising of younger classical archaeologists, and the work he has already published is recognised by all good judges to be a most valuable contribution to the study of ancient art." Through this approach Trendall developed a keen eye for graphic detail and the recurrence of similar patterns. Such a facility was essential for breaking non-machine ciphers and codes, as the key to decryption lay in the repetition of recognisable sequences of numbers or letters. For example, place names and common words kept reappearing in certain categories of message cipher, while the 10101 cypher required large quantities of intercepts to build up the depth necessary for patterns to clearly emerge. No-one could have been better qualified than Trendall to survey a figurative field and detect the repeats which enabled him and his fellow cryptographers to break the relevant codes.

In later years, as Ian McPhee has rightly pointed out, Trendall "was very reticent about this period of his life, and he was very reluctant to talk about his own accomplishments". When I included a reference to what he did during the war in a lecture I was to give in Canberra in 1991, I sent him a draft and received from him a letter of 12 April 1991 with the following reaction: "I must say that I greatly regret your reference to my war-time activities, since I regard these as a completely closed chapter in my book of life." He had nevertheless given a long and informative interview on 10 May 1990 to Professor Desmond Ball of the Strategic and Defence Studies Centre of the Australian National University, on D Special Intelligence Section and his part in it, and covered similar ground in an interview he had with David Jenkins who published extracts both in his book (1992) and in an article on "Our War of Words" in *The Sydney Morning Herald* on 19 September 1992. To David Sissons' regret, and mine, the letter he sent Trendall with queries about various aspects of the cryptographic operation in Melbourne arrived not long before Trendall's death and was never answered. Trendall told me that he intended getting rid of all of his personal papers, and McPhee has found nothing to indicate that he failed to make good his promise. Fortunately for us, correspondence by and about Trendall, together with records of decisions and actions affecting his career, both academic and military, has been preserved, so that this closed chapter in his life can be widely and deservedly opened to reveal to posterity the meritorious service he rendered Allied war efforts against the enemy between 1940 and 1944 in Australia.

I first became aware of Special Intelligence Section and Trendall's involvement in it when Dr Ken McKay mentioned it to me a reception in the Classics Department Museum at the Australian National University in Canberra. I subsequently confirmed the general tenor of the story with Mr David Sissons in Canberra, who actually worked in the Section in Melbourne from April to September 1945, after Trendall had left, but has maintained a life-long interest in the unit and assembled an invaluable file of information on its history. He has been more than willing to share his encyclopaedic and expert knowledge with me, and without his intervention, help and advice, this account of Trendall's work in the Section could not have been written. I also owe a particular debt of gratitude to Professor Desmond Ball and Dr David Horner, who are the co-authors of the thoroughly researched and highly readable volume published in 1998 on *Breaking the Codes. Australia's KGB Network 1944-1950*, and who gave generously of their time, co-operation and data. I am further much beholden to Mr J.H. Straczek, Senior Naval Historical Officer, Department

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of Defence; Ms Marilyn Minell, Access Services, and the staff of the National Archives of Australia; the Research Centre of the Australian War Memorial, Canberra; Mr Bruce English, Central Army Records Office, Victoria Barracks, Melbourne; and Mr Tim Robinson, University Archivist, University of Sydney, for granting me access to the records in their care.

Whether Dale Trendall would have approved of this account is no longer an issue, for the past cannot be expunged, but we would all be much the poorer for not having been able to learn this remarkable and inspiring story, which adds a new dimension to his illustrious and enduring achievements.

BIBLIOGRAPHICAL SOURCES

Little of the material on which this study is based has been published. The three main archival and documentary sources that have provided the outline and most of the detail of the narrative are:

- (a) files in the Australian Archives and the Department of Defence, Canberra, and the Central Records Office, Melbourne;
- (b) the Senate minutes and the personal file of Professor A.D. Trendall in the Archives of the University of Sydney; and
- (c) the interviews, correspondence and other reports on this subject in the personal possession of Professor Desmond Ball and Mr David Sissons of Canberra.

Without the co-operation of the latter two researchers, who have long collected data on Australia's contribution to the Allies' efforts to read the Japanese enemy's messages in the Second World War, this "closed" chapter in the story of Trendall's life could not have been opened and so extensively revealed. They generously placed all their records at my disposal, gave me permission to use them, and commented constructively on my work as it progressed. Their guidance made it possible to ensure that no obvious gaps were left in the sequence of events, even if certain details remain to be clarified and no doubt corrected. I am alone responsible for the final product.

As mentioned in the text, neither Trendall's literary legacy nor his obituaries shed any new light on this episode in his career. His wartime exploits can only now be reconstructed thanks to the release of previously highly classified papers for which the Defence Signals Directorate is responsible, and the personal reminiscences of the people involved, taken down by Ball and Sissons in the 1990s when the former became willing to speak about their secret activities in Melbourne. I am also grateful to Mr T.W.S. James, Director of the Defence Signals Directorate, who in an informative letter of 26 November 1990 gave me the historical and documentary background to the subject and helpful advice on how to proceed with my inquiries.

Such published sources as have been consulted are cited in the paper. The history of D Special Intelligence Section, FRUMEL and the whole decryption operation in Australia has yet to be definitively written. An authoritative introduction to the subject is to be found in Desmond Ball and David Horner, *Breaking the Codes. Australia's KGB network, 1944-1950* (St. Leonards, 1998), and a collection of useful reminiscences has appeared in Sharon A. Maneki, *The Quiet Heroes of the Southwest Pacific Theater: An Oral History of the Men and Women of CBB and FRUMEL* (National Security Agency, 1996). I owe my knowledge and copy of the latter publication to the kindness of Mr D.A. Hatch, Director, Center for Cryptologic History, National Security Agency, Washington.

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