REMARKABLE MAN, A REMARKABLE LIFE: A.W.H. PHILLIPS, M.B.E. (Military Division); A SUPPLEMENTARY NOTE*

Bill Phillips had a fascinating life before he achieved fame through his hydraulic machine and his discovery of the Phillips curve. The Note adds new information about Phillips' M.B.E., the attack on the *Empire Star*, the conditions at the Bandoeng prisoner of war camp in Java, and his operation of secret radios during the three and a half years of his imprisonment. The Note also attempts to explain Phillips' notorious Pass degree in sociology, explores his ability to acquire languages with little or no assistance, and his achievements in high school.*

A.G Sleeman

His personality was as fresh and endearing as his mind was creative. The world of economics was enriched by his restless originality; to be his colleague was to be his friend.

E.H. Phelps Brown The Times 6 March 1975

The New Zealand economist A.W.H. "Bill" Phillips was a remarkable man who had an extraordinary life, perhaps the most extraordinary life ever lived by an economist. Unfortunately many economists who lecture on, or do research related to, the Phillips curve are unaware of the life of the man who discovered it; and much of the biographical information about Phillips on the World Wide Web is wildly inaccurate.

The aim of this Note (on Leeson's 1994 paper in this journal) is to fill in some of the details of Phillips' life after he left New Zealand in 1935, and before he became an academic in 1950 and later achieved fame by developing his hydraulic machine (the Moniac) and by his discovery of the Phillips curve.[1] Some of the new information in the Note is taken from the unpublished reminiscences of Phillips' younger sister, Carol Ibbotson-Somervell (Ibbotson).[2] The Appendices include a previously unpublished photograph of Phillips; a photograph of the deck of the *Empire Star*; information about the conditions at the Bandoeng P.O.W. camp; the syllabus

of Phillips' B.Sc.(Econ) degree and his finals marks; comments on Phillips by his L.S.E. supervisors; a 1950 letter from Phillips to D.H. Robertson which discusses the economics underlying the Phillips machine; and an extract from van der Post's book describing the burglary of the Camp Commandant's office.

1. Armaments Officer

Phillips left New Zealand for Australia shortly before his twenty-first birthday. He planned to travel to England via China and Russia ("just wanted to see what those places looked like") and to qualify and practice as an electrical engineer. We know of some of his adventures during his travels from the interviews he gave to the New Zealand economist Conrad Blyth. That account is an unelaborated record of such things as Phillips' crocodile hunting and his learning differential equations while working at a gold mine.[3]

Phillips arrived in England in November 1937 and became a Grad.I.E.E. early in 1938 (and an A.M.I.E.E. in 1947).[4] When war was declared in September 1939 Phillips was an Assistant Engineer with the County of London Electric Supply Company, an occupation classified as "reserved" which meant that he was not subject to conscription.[5] Nonetheless Phillips volunteered for the R.A.F.V.R. in early 1940, and was commissioned, as a Pilot Officer, on August 1st, 1940.[6] He was subsequently promoted to Flying Officer (F/O).

Phillips was posted to Singapore in July 1941, he was then transferred to Burma, and finally returned to Singapore in February 1942 as Armaments Officer for 243 R.A.F. Fighter Squadron based at the airfield in Kallang.[7] The Kallang airfield was shared with 488 R.N.Z.A.F. Squadron and the two units provided the air defence for Singapore.[8] The squadrons were equipped with the obsolete, F2A-2, export version of the American Brewster "Buffalo" fighter.[9]

Phillips' applied his usual vigour and ingenuity to making the Buffalos effective fighter aircraft. His M.B.E. citation states that: "F/O Phillips … displayed outstanding ability, both academically and technically, and showed great energy in overcoming the initial difficulties experienced in operating "Buffalo" aircraft. F/O Phillips introduced a number of necessary modifications, which were accepted by the Air Ministry. It was due to his efforts and guidance

that the fighter aircraft on the station were able to complete the maximum operations."[10]

In her memoir Ibbotson writes of Phillips' work on the Brewster Buffalos: "The manner in which the existing guns had been installed made it impossible for them to function as attacking aircraft. His work on the necessary modifications was to re-time the setting of and firing of the guns. As I understood it, these had been programmed in relation to the propellers".[11] This suggests that Phillips was working on the interrupter mechanism that allowed the two Browning 0.5 machine guns mounted on the Buffalo's fuselage to fire through the propeller arc.

It was not long before "Kallang … was practically unserviceable owing to enemy bombing".[12] The British surrendered to a much smaller Japanese force on February 15th 1942, the largest surrender of British led forces in British history.[13]

2. The *Empire Star*

On Thursday February 12th 1942, the *Empire Star*, a refrigerated cargo ship designed to carry twenty-three passengers, was part of the last convoy to leave Singapore, bound for Batavia in Java.[14] Phillips was one of the more than 2,100 servicemen and civilians who were crowded on board the ship.[15] Soon after leaving port the *Empire Star* was attacked by Japanese aircraft, and Phillips improvised a mounting for a machine gun on the boat deck and continued firing at the Japanese planes during the three and a half hour attack, even after the section of the deck from which he was firing was hit by a bomb.[16]

There are three accounts of the engagement that provide additional information about what happened. The Blue Star line website provides a vivid description of the attack:

> In the early hours of February 12th 1942 the *Empire Star*, … with the *Gorgon*, and under the escort of H.M. ships *Durban* and *Kedah*, sailed from Singapore for Batavia with evacuated naval, military and R.A.F. personnel, together with civilian refugees - men, women and children. The *Empire Star*, which carried a considerable amount of

> R.A.F. equipment and stores, was a crowded ship. According to her Master, she carried more than 2,160 people, though as no accurate muster could be made this was probably an under-estimate. …. the presence of enemy aircraft was first reported at 8.50 a.m. as the convoy was about to clear the Durian Strait, south of Singapore.
>
> The first attack on the *Empire Star* was made twenty minutes later, when six dive-bombers came hurtling down out of the blue. The guns of all the ships burst into action. On board the *Empire Star* machine-guns and gunners of the R.A.F. were used to supplement the vessel's normal armament. One 'plane was brought splashing into the sea, to disappear in a sparkle of red flame and a pyre of curling black smoke. Another was hit; to break off the action with smoke pouring from its tail. But nothing could stop the fanatical determination of the Japanese. The *Empire Star* sustained three direct hits, which killed 14 people and severely wounded 17 others, besides inflicting great damage and setting the ship on fire in three places. …. Intermittent attacks by enemy aircraft continued for the next four hours. They were high-level attacks from 7,000 to 10,000 feet carried out by twin-engined heavy bombers, as many as 57 being counted. A large number of bombs were dropped, some of which missed the *Empire Star* by no more than 10 or 20 feet. …. The final attack was made by a formation of nine aircraft at 1.10 p.m., and once more the vessel, … '*miraculously escaped with a series of extremely near misses on both sides.*' (Italics in the original.)[17]

The second account is based on the experience of the 488 R.N.Z.A.F. Squadron, which boarded the *Empire Star* at 4 p.m. on Thursday, February 11th 1942. Phillips may well have been with this group since 243 Squadron had ceased to exist by February 1942. [18]

> Two waves of bombers raided the docks as they were embarking. At half past six the ship pulled out into the

> stream and anchored. Finally, at half past six next morning, she sailed for Batavia. When she was two hours out she was dive-bombed by several waves of Japanese aircraft and suffered three direct hits. A number of men were killed or injured, none of them from No. 488 Squadron. Members of the squadron manned Lewis guns and tommy [sic] guns and others fired rifles. As a result of the fusillade put up, one enemy aircraft was destroyed and one damaged. Waves of bombers continued to come over until after midday, but the defensive fire kept them high and they scored no more hits. The *Empire Star* arrived at Batavia on the evening of the 13th and the men went ashore next day.[19]

Lewis guns were light machine guns, Tommy guns were Thompson submachine guns: neither would have been effective against aircraft, rifles even less so.

Another account of the attack on the *Empire Star* is given in Peter Elphic's book *Singapore: The Pregnable Fortress* (Hodder and Stoughton London: 1995).

> [The] *Empire Star* left Singapore during the early hours of the 12th, threading her way through the protective minefields in convoy with the other ships; their track marked by temporary lights exhibited from boats manned by a few of the Royal Navy personnel left on the island because some marker buoys were out of position. By daybreak the convoy was well clear of Singapore and making top speed in an attempt to clear the Durian Strait by dawn. At about nine o'clock, when south of that Strait, they were found by Japanese aircraft. [The ship was attacked] [f]irst [by] dive-bombers [then] by waves of high-level bombers .... The ship used her own weaponry and the guns brought aboard by some of the RAF men to good effect. A Hotchkiss gun manned by the RAF shot down one Japanese dive bomber for certain.[20]

The Hotchkiss gun was probably the light machine gun version

used by the British Army. It fired a .303 round and, with a lot of luck, could fatally damage an attacking aircraft. It is possible that this was the gun that Phillips used.[21]

Although everyone who could seems to have been firing at the Japanese with any weapon that came to hand, Phillips' efforts were sufficiently outstanding for him to be remembered, twenty-five years later, by Alex Hunter as "the bloke who operated the machine gun on the boat leaving Singapore."[22]

3. P.O.W.

Java was defended by the Netherlands East Indies Army (N.E.I.A.) and British and Australian forces under Dutch command from February 25th .[22] Phillips acted as armaments officer at airfields at Batavia, and Bandoeng until the allied forces surrendered on March 8th, 1942.[23]

Phillips and two companions made their way to the south coast, where they hid while attempting to build a raft to try to cross the hundreds of miles of sea to Australia, an undertaking that would have taxed even Phillips' ingenuity.[24] The party was betrayed before they could launch their raft which was perhaps fortunate because they had no navigational charts or equipment, and the current, which flows from west to east into the Indian Ocean, is notoriously strong off the south coast of Java.[25] Phillips and one of his friends escaped capture by "making a mad dash towards and over the precipitous sea cliff", but they were soon forced to surrender.[26]

Phillips' account of his experiences as a POW in Java takes up sixteen words in Blyth's narrative: "The next three years were spent in prison camps – Bandung, Batavia, and then back to Bandung."[27] Even this statement minimises the duration of his ordeal (he was a POW for about three years and six months) and omits to mention his transfer, in June 1945, from Bandoeng to the Landsop Death Camp.[28]

When his L.S.E. colleague Chris Archibald cornered Phillips in an attempt to get him to talk about his time as a POW, Archibald was rewarded with the laconic: "she wasn't so bad once you got used to her".[29] Although Phillips' reply was a typical understatement; it was less so than one might expect. There were different degrees of hell experienced by the prisoners of the

Japanese, the Burma railway being among the most terrible; relative to the hell of the Burma railway Bandoeng was merely purgatory.[30,31] Ibbotson remarks that the only time Phillips showed emotion was when talking about his good fortune in not being transferred to work on the Burma railway: "he just bit his lips in a funny one sided way - particularly his own."[32]

4. Bandoeng POW camp

The POW camp at Bandoeng was large enough to hold 9,000 men and easily accommodated the more than 3,500 POWs imprisoned there in June 1942.[33] The camp, a former N.E.I.A. barracks, was inside the city of Bandoeng. Bandoeng (now called Bandung) is Indonesia's third largest city (currently with a population of 2.3 million), situated on the plateau in West Java, 112 miles southeast of Jakarta.[34] Before World War 2 Bandoeng was known as "The Paris of Java" and the Dutch had planned to move their administrative headquarters there because the climate was less brutal than on the lower lying coastal areas, and the risk of tropical disease was smaller. Sir Laurens van der Post, a South African who served with the British Army and was captured and imprisoned in Bandoeng, described the climate as "one long afternoon of summer". [35]

The Dutch built the barracks in preparation for the move from Batavia to Bandoeng. The camp (see Appendix 2) had streets of brick houses; batmen for the officers; cottages for the senior officers; a theatre (called Radio City) where plays, such as *the Importance of Being Earnest,* were performed; and a canteen where, initially, those who had money could buy "eggs and bacon or steak, eggs and chips."[36] "Weary" Dunlop who was Senior British Officer at Bandoeng from June to November 1942 "could scarcely believe their luck" when he arrived at Bandoeng.[37]

Frank Foster, an Australian who was transferred to Burma, described life at Bandoeng as "the happiest of our existence in the Far East."[38] John Denman, a Major in the Guards, described Java Z (the POWs' name for Camp No. 12) as "'the Ritz' of the POW camps" and said: "We had the cushiest time of all POWs of the Japanese."[39] van der Post writes that "Nichols and I … were to look back on our first term in Bandoeng as the 'golden age' of our captivity".[40] Wing

Commander W.T.H. Nichols, who was Senior British Officer at Bandoeng from November 1942 until August 1945, was to boast proudly that nearly all of his men survived, although many were physically and mentally damaged by their treatment during their long captivity.[41]

After the publication of his book *Venture to the Interior*, Sir Laurens van der Post became famous, and his POW experience at Bandoeng was seen as typical of the treatment of all prisoners of the Japanese. This, and his public plea for forgiveness of the Japanese, "infuriated prisoners elsewhere who had gone through an unimaginably more terrible ordeal."[42]

There were no executions at Bandoeng – "the danger was not so much a threat of unpredictable murder as the certainty of progressive malnutrition, disease, and starvation."[43] However, the prisoners were subject to brutal, arbitrary punishment, especially "slapping" by the warders, largely Koreans, two of whom were subsequently executed for war crimes.[44] Ibbotson quotes Phillips on the dangers of smiling under any circumstances in the presence of the guards: "No sense of humour at all … always thinking that you're laughing *at* them."[45]

The relatively good conditions in Bandoeng were probably the result of the initial benign neglect by the Japanese army camp commander, Captain Marika, who allowed the camp to be administered by the senior Allied officers.[46] Dunlop's extraordinary leadership imposed order and discipline in the camp and established a regime designed to fight the debilitating effects of boredom and imprisonment. Once the initial relationship between the POWs and their captors had been defined, Japanese cultural attitudes meant that there was little change when the Japanese POW administration took over the running of the camp from the army, despite frequent changes of commander.

Laidler's astonishment that Phillips as a POW had the leisure to study Chinese is understandable, but the camp had been turned into a huge educational centre from early in 1942 by Dunlop and other officers who were convinced that education courses would be a key factor in maintaining morale among the prisoners.[47] Dunlop's *War Diaries*, September 3rd, 1942, contains a "Statistical Report" that lists 144 weekly classes, in 30 subjects, with 40 instructors, and 1,207

students. Classes ranged from basic literacy to the post-graduate level; a "F/Lt" Phillips is included in the list of instructors. [48]

As the Japanese became increasingly aware that they were losing the war, conditions in the camp deteriorated; the Japanese systematically reduced the already inadequate food rations to three ounces of rice per day despite Java producing an average of five rice crops every two years.[49] Jones remarks that van der Post "was probably not exaggerating when he writes that if the war had not ended when it did … they would all have been dead within a few months."[50] Leeson quotes van der Post on the terrible physical condition of the prisoners on their liberation in 1945 and notes that Phillips weighed only seven stone when he returned to New Zealand (although Ibbotson's letter and the accompanying photograph – see Appendix 3 - suggest that seven stone was probably his weight on first reaching hospital in Singapore). [51]

5. Landsop

In June 1945 most of the prisoners were transferred out of the Bandoeng camp and after a number of moves ended up in Landsopvoedingsgesticht (Landsop).[52] Dunlop described the camp as: "a formidable, walled stone building with confining iron bars."[53] The Landsop camp was in a suburb of Bandoeng and had been built as a prison for juvenile offenders; it was very small compared to the Bandoeng barracks. van der Post estimated that the prison was originally designed to hold 120 Javanese juvenile offenders but that by July 1945 it held 7,000 POWs and civilians but this may be an overestimate; Jones writes that "Landsop … was built to house a few hundred boys" and that "Nichols afterwards recorded, in his precise way, [that] between May and August 1945 it held 782 officers and 2,145 other ranks."[54] The camp was so crowded that the prisoners had to make layers of bunks and there was a twenty-four hour line to use the latrines.

The Landsop prison was intended to be a Death Camp.[55] The Japanese mounted machine guns on the walls of the compound and forced the prisoners to dig mass graves. [56]

6. The night of the new moon

Phillips' determination to keep his activities as a POW to himself led him to tell Blyth that the POWs first learned of the dropping of the atomic bomb on Hiroshima from the Japanese, but we now know that it was Phillips who was the first POW in Landsop to learn of the destruction of Hiroshima.[57]

In 1970 van der Post published a memoir, *The Night of the New Moon,* largely concerned with his years as a POW and especially with the events at the Landsop camp in August 1945.[58] We are deeply indebted to Robert Leeson who serendipitously recognised that Phillips was "the gifted young New Zealand officer " who plays such a crucial role in van der Post's story.[59] Our debt to Leeson is still greater because of his energetic and diligent pursuit of clues that led him to recover some of Phillips' activities as a POW.

Leeson's article revealed the vital role Phillips played in making and operating the secret radio receivers that allowed the senior British officers in the camp to know what was happening in the war against Japan.[60] Although from the earliest days in Bandoeng the POWs operated radios, as the war progressed the need to keep the radios secret became more and more vital. It seems that during the last eighteen months of their captivity Phillips' ability to miniaturise radio sets led him to become van der Post's radio operator, and the only allied source of information about the progress of the war for van der Post and Nichols.

7. Effecting an entry

At the beginning of August 1945 one of the radio's "acorn" valves and a small electrolytic condenser failed just at the time when news of what was happening in the war was vital to the prisoners because they reasonably believed that they were in imminent danger of being massacred.[61,62] As a last resort the senior officers had developed a plan to stone the Japanese if they started to kill the POWs but everyone knew that, at best, only a few prisoners would survive to tell the story of the slaughter.[63]

At the suggestion of P/O Donaldson, he, van der Post, and Phillips took advantage of the darkness afforded by the new moon to

obtain replacements for the failed parts by stealing them from the camp commander's radiogram. Leeson writes that: "Phillips and van der Post had obtained the components for the radio by breaking into the camp commander's office and stealing parts from his radiogram!"[64]But this is not quite correct: Donaldson did the burglary, van der Post acted as lookout outside of the office, and Phillips was the lookout at the entrance to the camp commander's quarters.[65]

van der Post tells the story of the burglary (reproduced in an abbreviated form in Appendix 4) with great literary skill, but his most recent biographer has shown that van der Post's narratives have to be treated with caution.[66,67] However, van der Post's account is likely to be true, although the alarming arrival of the Camp Commander's car may have been an embellishment.

After the burglary Phillips spent three nights rebuilding the radio and then searching for news of the war.[68] Probably on the night of August 6th (the atom bomb had been dropped on Hiroshima at 8 a.m. that morning) Phillips picked up part of a news broadcast from a station in Delhi, and the following night confirmed the destruction of Hiroshima by listening to news from stations in Delhi, Perth, and San Francisco. On learning the fate of Hiroshima from Phillips, van der Post ordered Phillips to keep the news to himself "with a peremptoriness which may have sounded unappreciative of the near-miracle he had performed in getting us in radio contact with the outside world again."[69] van der Post makes no further reference to Phillips.

Ironically, the audacious burglary and the dangerous task of rebuilding and operating the radio were unnecessary.[64] Although the Japanese commander in South East Asia had issued an order to all prison-camp commanders that they should "… annihilate them [the prisoners] … and not leave a single trace" his order was not carried out.[70]

8. Radio "expert"

Ibbotson provides us with an account of Phillips' part in the operation of the secret radios based on her memories of the conversations that she had with Phillips on his return to New

Zealand. The conversations took place after he was flown to New Zealand from Singapore during the two nights Phillips spent in her house in Auckland and then when he was in hospital there.[71] Ibbotson's account makes it clear that Phillips had been building and running secret radios far longer than one would infer from van der Post's book and Leeson's paper.

Ibbotson writes that after Phillips and his remaining comrade were forced to surrender: "The two men were put into a barracks recently occupied by the Dutch. Before the Japanese could remove all useful materials … Bill managed to secrete enough parts and equipment to make two radio sets."[72] Had the Japanese discovered the radio parts, Phillips and his comrade would have been tortured and then decapitated.[73]

van der Post always refers to "the" radio in the singular, and although he notes that there were other clandestine radios in the camp, he never mentions that Phillips operated one.[74,75] van der Post writes that Phillips had operated the miniature radio "for *some eighteen months*".[76] (Emphasis added.) However, Ibbotson writes: "Bill was not only responsible for making and siting this set, but also did the listening throughout those *three and a half years*."[77] (Emphasis added.) Ibbotson's forty two months is consistent with the excerpt from Dunlop's diary for November 5th 1942, the day before Dunlop and the Australian POWs left Bandoeng: "Saw Laurens [van der Post] about my X [wireless] who advised me to try to take it. Finally after the conference with Phillips (expert) … decided to carry pieces and hope to reassemble."[78] (Square brackets are Leeson's, parenthesis in the original. Leeson's ellipsis cuts "also Roberts (super expert)". The reference is to R.A.F. Squadron Leader Roberts.)

The diary entry was written two and a half years before the events described in *The Night of the New Moon*. Dunlop (and presumably van der Post) knew Phillips by name and regarded him as an expert on secret radios twelve months before the period van der Post writes about.

Ibbotson writes that Phillips' first radio set was "installed under the tiled floor of the kitchen, having above floor level only the headphones and a knitting needle to disconnect and hide when their captors approached the area. A bicycle spoke at one corner of a certain tile engaged the tuning and the headphones were likewise

attached by the knitting needle."[79] Phillips' first radio was able to transmit as well as receive messages. Leeson reports "the New Zealand Ministry of Defense has revealed that Phillips' parents received a transcript of a short wave radio broadcast from their son in April 1943."[80] This radio set, which probably had six valves and would have been bulky, could not have been van der Post's "first set" which was "built into the *seat* of a wooden chair" (emphasis added) – a temporary home for it until it could be further miniaturised and made mobile.[81] van der Post never mentions a below floor level radio.

By July 1945 Phillips had reduced the size of the radio until it was small enough to be concealed in the heel of one of a pair of wood and rubber clogs: "these special wireless clogs were slightly bigger and thicker than normal, but not so big as to attract notice."[82,83]

9. What's in a name?

van der Post refers to Phillips in his book thirteen times (once as an Australian) in the space of twenty-two pages, but never by name.

Only two people other than van der Post participated in the raid on the Landsop Camp Commander's office, one of whom was Phillips. At the time of the Landsop burglary van der Post, Donaldson and Phillips were sleeping in the same, over-crowded, hut. And Phillips had provided van der Post with radio intelligence for at least eighteen months.[84] How did van der Post communicate with Phillips during their meetings, by rank, formally, as "Flying Officer"? It is possible that van der Post had forgotten Phillips' name but it is strange that he does not say so because on two occasions in his book he apologises for forgetting the name of someone he refers to.[85] Twenty-three years after the publication of his book, van der Post, when contacted by Leeson, readily identified Phillips and paid a fulsome tribute to his fellow POW but apparently did not comment on his failure to name Phillips in his book.[86,87]

10. Nicotine addiction?

Phillips' chain smoking is legendary. Leeson referring to "his addiction to untipped cigarettes", clearly attributes Phillips' chain smoking to his experience as a POW.[88]

Ibbotson states that Phillips was a heavy smoker from his youth: "Smoking, a popular habit [in] those days, was his only compulsion."[89] She notes that during his apprenticeship Phillips ran evening cinema shows partly "to fund that cigarette habit."[90] Ibbotson writes that: "Much has been said about Bill's smoking. Like most men of that era he certainly smoked a lot of cigarettes. But a big need was for something to occupy his hands, and I saw many cigarettes burning in his hand and being stubbed out with very little actual smoking as he talked on a subject about which he felt intensely. He would automatically relight another cigarette and that too would end up burnt up, stubbed out but very little smoked."[91] In a similar vein Adrian Pagan writes: "I am very sensitive to smoke. … Bill's room smelt of tobacco but in many long conversations with him about economics I can recall him having a cigarette in hand but I can never recall him smoking it. It was always in his hand. So I am inclined to agree that there was some tendency to just hold it. The day he had the stroke he had one in his hand as my father-in-law who was talking to him at the time noticed him drop the cigarette. It was striking that my main memory of him now is of his hands trembling."[92]

The author (an economics student at the LSE from 1957-1960) remembers Phillips as a handsome man with a profile you might see on a Roman coin. He was a little shorter than average height, even for those days, and slightly built. In class he always wore a dark suit, a crisp white shirt, neatly knotted tie, and highly polished shoes. Phillips' hands shook and he often held his cigarettes with the butts between thumb and forefinger, the lit ends curled into his deeply nicotine stained palm so that only thin plumes of smoke were visible – a serviceman's way of smoking surreptitiously.

Phillips was able to smoke in Bandoeng but it seems unlikely that he acquired his chain smoking habit there. "As in most Japanese camps, there were very severe restrictions on smoking …"[93] Dunlop mentions the Japanese obsession with fire and hence with smoking:

"Rigid prohibition of peripatetic smoking (can only smoke outside near a special container)" and, complains about Australians making trouble by smoking, observing: "Ns [Japanese] are dead nuts on matters of smoking".[94] Cigarettes would hardly have been a priority item to the officers trying to obtain supplies for the prisoners from outside the camp.

van der Post wrote to Leeson that Phillips was shy and sensitive; personality traits often noted by Phillips' friends and colleagues.[95] Ibbotson suggests that Phillips' smoking was a way of dealing with his "shyness when facing any daunting situation".[96] She tells how Phillips as a young man developed "a stammer" which he joked about, saying "he just used it when the teacher asked some question that he could not answer immediately". Ibbotson's view that Phillips' chain smoking was actually a nervous habit, providing him something to do with his hands when stressed and an aid to concentration when grappling with a problem, is persuasive. But Phillips did smoke some of the cigarettes he lit even if he did not finish all of them.[97]

11. A smoke screen?

Ibbotson's comments throw new light on the mystery of Phillips' infamous Pass degree, a B.Sc.(Econ), with sociology as the Special Subject. Leeson offers the standard explanation of Phillips' puzzling performance on his finals: Phillips could not concentrate while taking his final exams because of his nicotine "addiction". Leeson quotes a letter Robbins writes in October 1950 supporting the appointment of Phillips as an Assistant Lecturer at the L.S.E. at the top of the pay scale. Robbins argued that Phillips' chain smoking, a consequence of "his somewhat lamentable experiences during the war when confined in a Japanese camp", meant "without cigarettes in an examination room, he was completely at a loss within an hour."[98]

There are a number of problems with the "addiction" theory.[99] In the first place it is not clear that Phillips had a nicotine addiction. Secondly Phillips would have been allowed to leave the exam room (suitably supervised) to use the lavatory, during which time he could have smoked.[100] Thirdly, Phillips' tutors' reports (see

Appendix 5) give no hint that Phillips would have problems with his final exams because of his chain smoking. Finally, as we will see, the pattern of Phillips' finals marks is not consistent with the hypothesis.

If the nicotine addiction theory is implausible, why did Phillips end up with a Pass degree when everyone who knew him well regarded him as a genius?[101] A more appealing hypothesis is Barr's argument that Phillips "essentially gave up studying sociology during his last year", which he devoted to working on the Phillips machine in his friend's garage in Croyden, Surrey.[102] Walter Newlyn, an undergraduate friend of Phillips and one year ahead of him at the L.S.E., spent many hours discussing monetary theory with Phillips. (When they were not discussing monetary theory Newlyn and Phillips found time to date two girls from the chorus line of the successful London musical "Bless the Bride".)[103] Newlyn states that Phillips spent most of the Easter vacation working on the machine, a time when most students would have started preparing for their final exams which started early in June.

By Phillips' final year, Newlyn was an Assistant Lecturer at Leeds (he arranged one of the first sales of the Moniac to the Leeds Economics Department). Newlyn admits that Phillips' obsession with the machine "undoubtedly detracted from work for his final examination..."[104] Newlyn continues, sheepishly, "My part in this worried me very much when I learnt of his poor results …". Newlyn clearly attributes Phillips' poor performance on his finals to lack of preparation, not to cigarette deprivation.

12 The reluctant economist?

There is also a major problem with the hypothesis that Phillips almost failed his degree because he stopped studying sociology: Phillips passed his sociology courses but failed Applied Economics, and Economic History, and scraped through in Economic Principles by a single point.[105] (Phillips' marks on his final exams are reproduced in Appendix 6.) These marks are not consistent with the addiction theory; was Phillips overcome by the need to smoke only when sitting the papers in the economics part of his final?

With the exception of Dr. Blackburn's comment there is no

suggestion in Phillip's tutors' evaluations (reproduced as Appendix 5) that Phillips was in danger of failing his degree. The advisers would have seen his exam marks for Part I in June 1940, his marks for the second year exams for Part II in June 1947 (when he passed English Economic History), and they would have marked his essay assignments as well as observing him in class. There appear to have been no warning signs of a potential academic disaster ahead, and there is no mention of problems of concentrating when denied the ability to smoke. Although his tutors were sociologists they would certainly have been concerned if his exam results indicated that Phillips might have problems with the economics papers.

The tutors' reports do indicate that Phillips was very resistance to theory: "Works hard, tries to think but is distrustful of "academic" ideas". Blackburn's prescient remark, "he possibly may not do well in exams", probably recognised that Phillips would resist learning a lot of theory that he felt bore little relation to reality.[107] By the end of the 1948-1949 Michaelmas term there is the comment "Less negative than several years ago …" but that may simply reflect the fact that Phillips had become more at ease having decided to stop wasting his time studying material that didn't interest him and to concentrate on the Moniac. There are no tutors' reports for the Lent and Summer terms of the 1948-1949 academic year which suggests that Phillips did not attend tutorials during this period.

Phillips distaste for theory not directly related to solving real problems extended to economics. Lipsey has observed that Phillips "preferred to assert relations without enquiring in any detail into their derivations".[107] The sort of economic theory taught to undergraduates in the period from 1946 to 1949 was pretty thin gruel. Finding tangencies between indifference curves and budget constraints must have seemed more than a little absurd to Phillips, who always shunned the title economist and preferred to refer to himself as an engineer. Phillips' approach to life was practical and improvisational, and he would have been in his element using his creativity and boundless ingenuity to solve the practical problems that arose from sorting out the Moniac's plumbing.[108] It is hardly surprising that he chose to devote his time and energy to the Moniac rather than cramming unpalatable economic theory into his head.[109]

Robbins would have known Phillips' finals marks, as would Carr-Saunders, the Director of the L.S.E., as well as the faculty in the other L.S.E. departments. Robbins' problem was not explaining away Phillips' poor degree in sociology; it was the embarrassment of arguing for the appointment as an assistant lecturer in the Economics Department of someone who had done so poorly in his economics papers fifteen months before. No doubt everyone concerned showed a gentlemanly absence of skepticism, and common sense prevailed.

13. Pseudo-science

Some economists find Phillips' poor degree less of a puzzle than his decision to specialise in sociology, but Ibbotson points out that Phillips was interested in sociology from the time he left school.[110] She writes: "Bill had been reading, while at Tuai, encyclopaedias on Sociology and The Great Religions of the World. … So it is not surprising that he initially studied sociology."[111] Phillips was also a child of the Great Depression and not alone in feeling that sociology might have some key to understanding that great social dislocation.[112]

Phillips enrolled as an internal evening student at the L.S.E. in 1938 and passed Part I of the Intermediate exams in June 1940, long before his years as a POW.[113] Economics and Applied Economics were required subjects in Part I.[114] By June 1940 Phillips had had a full year of economic principles and applied economics and had passed the three-hour essay exams in those subjects. His decision not to major in economics was therefore based on a more than average exposure to the subject and with the knowledge that he was required to take two more economics courses for his Finals.

Phillips' tutors' reports (Appendix 5) stress how out of place he felt amongst his fellow students. This is hardly surprising: Phillips' celebrated his thirty-second birthday on November 18th, 1946 (the LSE Session began in the first half of October); in his early twenties Phillips had traveled half way around the world; he had spent the previous five and a half years in the R.A.F.V.R. (three and a half as a POW) and seen combat; and he had worked both as an apprentice and as a practicing electrical engineer. The second year students with whom he attended lectures and classes would have been mostly in

their late teens, straight from grammar school and predominantly female. Phillips' tutors were remarkably unempathic when they wrote such things as: "not very well adjusted to school. Seems to feel that age discrepancy between younger students and himself – also discrepancies in experience – put him into a special category which makes him trustingly defensive. A bit compulsive" and "slowly overcoming feelings of inadequacy related to age in relation to younger students but still something of a psychological problem (slightly schizoid traits.)"

Whatever motivated Phillips to choose sociology the choice was not a happy one. It seems likely that no later, and probably much earlier, than the Lent term of 1949 Phillips had come to hold sociology in disdain: "a combination of ethics, social statistics, and pseudo-science."[115]

14. The accidental academic

Phillips' decision to devote his remaining time at the L.S.E. to working on the Moniac must have seemed commonsense to him: he only had a few months before his New Zealand government grant would run out. Phillips probably felt that if he ended up with a bad degree that would be of no consequence. When Phillips returned to England he also returned to his job with the County of London Electricity Supply CO.[116] A qualified electrical engineer who had never been involuntarily unemployed during the Great Depression was hardly likely to have problems making a living even if he failed to get a degree in sociology.

Phillips is unlikely to have left Landsop with the rest of his life neatly planned. Being paid by the New Zealand government to study full time would have been an attractive option to someone who enjoyed learning and who had already completed one third of the degree requirements as an evening student before the war. Barr quotes Valda Phillips' belief that: "[He] embarked on it [the B.Sc.(Econ) degree] partly as a result of being unsettled about his future at the end of the war and intended it merely as an adjunct to future engineering work". [117]

Phillips was obviously fascinated by the problems of modeling the stock-flow macro model he had been exposed to in lectures. He also

wanted to develop a pedagogic device to simulate visually the behaviour of the IS-LM model in real time. Phillips' decision to concentrate on attempting to finish the machine before his grant ran out was probably also influenced by the possibility that it would generate some income before he traveled on to "the West Pacific - East Asia region".[118] It is likely that Phillips had intended to go to China but that plan would have been thwarted when the communists won the civil war in 1949.

Academics have an unfortunate tendency to assume that being an academic is the only fruitful and enjoyable way to spend one's life. It seems to be an assumed that Phillips would naturally have been interested in an academic career and would therefore have pursued his studies diligently. The fact that Phillips clearly recognized the commercial potential of the Phillips machine (twelve were sold, although it is not known if he made a profit from them) has largely been ignored.[119] One of the objections to employing Phillips to work on building a machine for the School was the possibility that Phillips would exploit the machine commercially.[120] In fact, Phillips never patented the machine and, as Meade was to point out when the decision was made to appoint Phillips as an Assistant Lecturer, the opportunity cost of Phillips' time was such that Phillips subsidised the construction of the first Moniac machine. Ibbotson writes that Phillips wrote to his parents at the time that the L.S.E. "made their offer to help fund him while he developed the "Moniac' - an amount they [the L.S.E.] later felt to be insufficient. His letter home mentioned the need for £400-500. I listened as our parents decided that they would manage £250 … I know they were sorry that they could not send all that he needed."[121]

Phillips' friends came to his aid. Walter Newlyn guaranteed an overdraft to allow Bill to purchase the components for his machine.[122] Phillips' landlord, Mr. R.W. Langley, a former employee of the Metropolitan Water Board, provided the well-equipped garage where the machine was originally constructed and helped with the hydraulics. In addition the Langley's provided Phillips with free room and board during the summer (after his graduation when his grant ran out), and a weekly visit to the cinema with them and one packet of cigarettes per week. Graeme Dorrance remarks that "Bill

must have had other sources to satisfy his nicotine needs" but they may not have been as pressing as Dorrance assumed.[123]

When James Meade recognised Phillips' academic potential and opened up a career as an academic economist to him, it was probably a welcome surprise to Phillips, who had a lifelong interest in learning. As an academic Phillips would have ample time to work on the practical problem of applying classical control theory to macroeconomic policy. That does not mean that in 1946 Phillips returned to his degree with academic ambitions or that, in 1949, obtaining a "good" degree was important to him.

15. Linguist

Phillips' work in economics has naturally been the major focus of economists' interest in his life. His ability to acquire languages with little or no formal instruction has received less attention, although the fact that he learned Chinese while a POW is well known, as was his love of the classic Chinese novels.

We know from Blyth that, in early July 1937, Phillips set out from Australia for Shanghai on a Japanese ship (most likely a tramp steamer on which there would have been, at best, only a few officers or crew who spoke any English) and that, after a day at sea, the ship was diverted to Yokohama when Japan declared war on China.[124] Phillips then made his way to Tokyo to obtain a Russian visa. From there he travelled to Hiroshima where he had to persuade the Japanese that he was not a spy. He then travelled, presumably on a Japanese ship, to Korea at that time part of the Japanese Empire. There he took the train (carefully escorted to his hotels at each stop by the Japanese) to Harbin in Manchuria, which had been occupied by Japan in 1932. In 1937 few Japanese even in major cities would have spoken English. Phillips' journey through Japan and Japanese-held territory was a remarkable feat for someone who apparently did not speak any Japanese at the outset of his travels.

Phillips told Blyth that he "stayed a few days in Harbin in late 1937 – it was full of White Russians – before crossing into Otpur in Siberia and via the trans-Siberian Railway eventually arrived in Moscow." The 5,700-mile journey from Vladivostok to Moscow

today takes a week. Phillips joined the trans-Siberian Railway via its southern spur and so Phillips was probably in Russian speaking territory for at most two weeks. But by the time he arrived in Moscow Phillips had learned enough Russian to try, perhaps not very seriously, to "get a job in mining but finding all the jobs taken by political prisoners" he travelled on to London.

Blyth states that: "While waiting for the L.S.E. to start in October [Phillips] started at the School of Oriental Studies to study Chinese which he had begun to learn in prison camp in Java. He also 'pushed on with his Russian' which he had been helped with by White Russians from the Dutch army he had found in Java. (He actually lived in London during this time with the family of a Russian whose brother had been a fellow prisoner.)"[125]

In 1947 Phillips' became an Associate of the Institute of Linguists (A.I.L.) qualifying in both Russian and Chinese. The A.I.L. qualification was probably at least equivalent to what was taught in the language part of a first year university course in modern languages.[126]

Ibbotson notes that on his return to New Zealand "Bill was in contact with Chinese Officials [presumably the Kuomintang] and he was invited to become involved with the development and implementation of a new universal Chinese language. He did not take up this challenge."[127] Clearly Phillips had an excellent command of Chinese. The passage also provides a clue to where he might have planned to go when he completed his degree.

Phillips' Ph.D. Admission Application Form lists under "languages which you can read fluently: French, Russian, Chinese" and "which you can read with difficulty: German, Dutch, Malay."[128]It was ironic that Phillips could read German. In the 1940's the L.S.E. required students to demonstrate a knowledge of two foreign languages, although the standard was not high. On September 8th 1947 Phillips wrote a letter to the L.S.E. Registrar asking to be allowed to replace the examination in either German or Italian by an examination in either Chinese or Russian. He explained that he had learned some Russian and Chinese from fellow prisoners and that he had "passed the Associateship examinations, Stage II, of the Institute of Linguists, with honours in the case of Chinese." He continued: "As my work after taking the

degree will be in the West Pacific-East Asia region, German or Italian would be of very little use to me; Chinese and Russian, on the other hand, will be extremely valuable, so that I must in any case continue studying them." He then offered to take "an examination of rather higher standard than the usual translation paper … ."

Anyone familiar with university bureaucracies will not be surprised to discover that Phillips passed the German translation paper in June 1948.

16. A young man in a hurry

Phillips' ingenuity in adapting to the transportation problems of getting from his home at "Jersey Meadows" to high school has been noted by Leeson[129]. Ibbotson tells the story in greater detail.

> To attend Dannevirke High School nine miles away included biking 6 miles to Tahoriti, then slow-training 3 miles to Dannevirke and then walking three-quarters of a mile up-hill to school, arriving late during assembly. On the return journey the train did not leave Dannevirke until ten minutes past five and frequently, with shunting at two stations en route, did not arrive at Tahoriti Station three miles on, until five thirty p.m. Then followed a six mile push bike over metalled [gravel] country roads, up-hill to the foot of the Ruahini Ranges, frequently into a howling prevailing wind. …
>
> To utilise travelling time he made a book stand and fitted this to the handle bars of his bicycle – and some study was done while he cycled to school. …
>
> Later he acquired a discarded small truck – just a cab and tray for, if memory serves me well, the sum of £5.00. He painstakingly repaired it, learning the mechanics of the engine, as he worked. He could then accommodate two in the cab and two or three in the tray. (No seat belts in those days!) So off they went to school. This was deeply disturbing to the school hierarchy – unheard of idea – pupil driving to school – and he was banned from driving to

> school – so I think he then parked a few streets away. Eventually the novelty of a student arriving in a 'motorised vehicle' lost top-billing and though the edict officially continued, it was virtually ignored.[130]

Phillips matriculated from Dannevirke High School in December 1929 a few weeks after his fifteenth birthday on November 18th**.** He had already sat and passed the University Entrance and the Public Service exams. Ibbotson writes: "In those days you could not attend university until you were sixteen years old. These were depression years and my parents had to accept that they could not keep him at school that extra year and certainly could not afford to fund him to university. It was a sad and hard decision for them to make."[131]

Ibbotson comments that: "In 1929 in … the Te Rehunga community it was unusual for children to go to high school. In my time, 1931, only 3 out of 10 progressed to high school and that was an exceptionally high percentage."[132] It seems unlikely that all of those who attended high school would have matriculated and fewer would have passed the university entrance and civil service exams. Phillips was in the Vth form because of promotion by merit; because of his date of birth he would in any case have been one of the youngest pupils in his year. Students planning to go to university would have spent another two years in the VIth form.

When Phillips left school it is unlikely that he had studied calculus. But by 1950 Phillips was a very competent mathematician, who was able to write knowledgeably about differential and difference equations and had a sufficient mastery of them to uncover the mathematical model which determined the behaviour of the Moniac.[133] Much of his knowledge was probably acquired during the years he was an apprentice electrician at the Tuai hydro-electric station where he took a correspondence course to qualify as an electrical engineer. He presumably continued to study by correspondence during his peripatetic years - we know from Blyth that Phillips was learning differential equations while servicing the generator at a gold mine in Georgetown, Queensland.[134] Perhaps only Phillips could have managed the staggering logistical feat of taking a correspondence course in electrical engineering while traveling around the South Island of New Zealand on a motorbike, and then

up the east coast of Australia and, via Japan, Korea, Manchuria, Siberia, Russia, Poland, Germany, and Belgium - almost half way around the world - to England.

17. A task to be done

Until 1994 economists knew only that Phillips had been a POW in Java. Because of Robert Leeson's alertness and persistence we now know something of Phillips' activities in captivity. Phillips' sister's memoir and the information in Phillips' student file suggest that Phillips' Pass degree was probably the result not of nicotine addiction but of a deliberate decision to abandon studying for his degree in favour of working on the Moniac as a potential business venture. Her memoir, and a careful reading of Blyth, has added to our knowledge of Phillips' language skills.

The more one learns about Phillips the more astonishing he seems. Nick Barr seems to have captured the essence of the man when he wrote: "Bill Phillips made major innovative contributions to economics, of which the machine was only the first, and he rose seemingly effortlessly, from a Pass degree in Sociology to a Chair in Economics in nine short years. But he was remarkable also in human terms – adventurous, tenacious, insatiably curious, shy, and with a lovely sense of humour. He is one of those rare people memories of whom always bring a warm smile to those who knew him." [135]

As each year passes relatives, friends, and colleagues die, memories fade, and myths become embedded in the economics literature and on the World Wide Web. The time has surely come for someone to produce a full-scale biography of this remarkable man.[136]

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END NOTES

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[1] Blyth (1975), Leeson (1994 and 2000a), Barr (ch.11 in Leeson (2000)) and van der Post (1970) are the primary published sources of biographical information about Phillips. Blyth's obituary of Phillips (1975) is reprinted in Bergstrom (1978) - the *Festschrift* assembled to honour Phillips' sixtieth birthday on November 18th 1974.

The L.S.E. is reorganising its files and Phillips' staff file is not available.

Reminiscences of Phillips by his friends, former colleagues and students appear in Parts 1 and 2 of Leeson (2000).

[2] The L.S.E Archive has a copy of Carol Ibbotson-Somervell's memoir. In Ibbotson (2008a) she writes that the memoir was completed in 1993. Leeson (2000a) cites the memoir as Ibbotson (1994).

[3] Blyth (1978 p. xiv). The quote in Phillips' own words in the previous sentence is taken from Blyth (p. xiv). Sadly Phillips never visited China.

The sparseness of Blyth's record of Phillips' life is explained by the circumstances of its composition. In an email (12 December 2007) Blyth writes: "I had agreed to prepare a biographical note for the Festschrift organized by Brian Silverstone for Bill's 60th birthday. I decided with Bill's approval to prepare something in his own words. I interviewed Bill at home on two or three occasions, under the watchful eye of Valda his wife. Both she and the doctor were concerned about Bill over-exerting himself (after his crippling stroke). There was no tape or transcript. I took notes and occasionally wrote

down phrases and sentences. As soon as possible after the interviews I wrote up a connected passage. When I had a first draft that satisfied me I showed it to Bill who asked Valda to edit it. Her editing consisted in removing a few remarks by Bill in his own vernacular. I did not keep my notes – I must have destroyed them. Basically, the note was primarily Bill's story as he remembered it. It has to be remembered that by this time his health was declining rapidly and his memory was fitful. He had to use a wheel chair."

[4] Blyth (1978 p. xiv). The exam papers taken by Phillips are archived in what is now the Institution of Electricity and Technology (IET). The first of the three-hour exams was on English language; the last had three economics questions that give some idea of Phillips' exposure to economics before he started on his B.Sc.(Econ): e.g. Q2. "Though prices are largely the result of equilibrium between supply and demand, they do not depend only on this. Explain why."

In an email (1 January 2008) Ms. Anne Locker, IET Archivist, writes: "Mr Phillips became a Graduate member of the IET in 1938 and an Associate Member in 1947. … [T]he Graduateship Examination, … was actually the Associate Membership examination, which was instituted in 1913 to ensure members had an adequate level of education in electrical engineering. It was called the Graduateship Examination between 1929 and 1939. You could obtain an exemption if you had an engineering degree, a Higher National Diploma or a Diploma from Faraday House [an engineering college], so the level would have been about equivalent to a degree although it would of course be less extensive."

Professor John Williams, Professor of Nuclear and Energy Engineering, Aerospace and Mechanical Engineering Department, University of Arizona (email 2 May 2008) writes of the exams: "The first part of the exam paper you sent me is quite elementary: about the technical level, I would think, of a scholarship entrance exam to an honours degree in engineering at Oxford or Cambridge, but maybe less sophisticated. It requires some elementary knowledge of ordinary differential equations in parts of the electrical technology paper.

The papers in the second part are much more advanced, and would require several years of post-school study. Their flavour is very technological, and the solutions expected would be more of a

cookbook style than in any engineering curriculum after about 1960. … Knowledge of second-order differential equations and some vector calculus is required. Laplace transform methods were presumably expected, though this is not explicit in the form of the questions. Some recognizable features of control theory, required in a few questions, involve questions of stability and transient response. These, of course, are the questions that Phillips later addressed in his contributions to economics."

[5] Blyth (1978 p. xiv).

[6] Leeson (2000a p. 4).

[7] Blyth (1978 p. xiv). No 243 Squadron "reformed at Kallang on 12 March 1941 as a fighter unit for the defence of Singapore. It was equipped with Buffaloes". Air of Authority website (AA). Leeson (2000a p.4) states that Phillips was "appointed Munitions Officer (sic) at Kallany (sic) Aerodrome, Singapore". A map of the Singapore airfields is on p. 257 of the New Zealand Electronic Technology Centre (NZETC) website.

[8] The air defence of Singapore by 243 and 488 Squadrons is chronicled in the NZETC website and in the Wikipedia "Battle of Singapore" entry. Photographs of the Kallang airfield and of Brewster Buffalos can be found on the NZETC Image gallery.

[9] See the Wikipedia entry "Brewster Buffalo". "Buffaloes, … were considered unsuitable for service in Europe, … as soon as the Japanese attacked it became obvious that they were just as unsuitable in the Far East." (AA) "Generally speaking, the Buffalo proved a disappointing aircraft. It did not stand up well to sustained climbing at full throttle, and frequently suffered from loss of power due to a drop in oil pressure and overheating. It could not operate above 25,000 feet, took thirty minutes to get there, and its speed was less than had been expected of it." NZETC Nos. 243 and 488 Squadrons p. 9.

[10] Leeson (2000a p. 5). The M.B.E. (Military Branch) citation is quoted from *The Auckland Weekly,* 13 May 1948. M.B.E. stands for Member of the Order of the British Empire. See the Wikipedia entry "Order of the British Empire".

[11] Ibbotson (1993 p. 11). The Buffalo was armed with four 0.5 Browning machine guns: two in the wings and two on the fuselage. The arcana of the Buffalo's armament is explored, in loving detail,

in the Warbird's Forum message board - Brewster Buffalo – Buffalo Armament And Ammo Load website. (See especially #4.)

[12] AA website and NZETC website.

[13] See the Wikipedia entry "Battle of Singapore" and Hastings (2008 p. 7).

[14] Batavia was the Dutch name for Jakarta the capital of Indonesia. Java was part of the Dutch East Indies.

[15] The *Empire Star* was 542' long and 70' wide. Appendix 1 contains a photograph of the ship's deck with servicemen standing almost shoulder-to-shoulder. One estimate puts the number of servicemen and civilians on the *Empire Star* as 3,500.

[16] Blyth (1978 pp. xix-xv) and Leeson (1994 p. 608) quote Phillips' M.B.E. citation, which describes his part in the defence of the *Empire Star*. Captain Capon O.B.E., whose superb seamanship was responsible for the survival of the *Empire Star*, was made a C.B.E., and 2 O.B.E.s , 3 M.B.E.s and 2 B.E.M.s were awarded to other members of the crew (see endnote 10). A George Cross (the civilian equivalent of the Victoria Cross) and an M.B.E. were awarded to two Australian nurses.

[17] Blue Star's M.V. "Empire Star" website. The quotation is taken from *Blue Star at War 1939-1945* by Taffrail (London: W. Foulsham, 1973).

The Heroines of the Empire Star website states that the *Empire Star* was part of a convoy of sixteen (estimates vary from six to thirty) ships and was one of only two that were not sunk. H.M.S. Durban a WW1 light cruiser largely armed with anti-aircraft guns escorted the convoy. (Wikipedia "H.M.S. *Durban*".)

The British and Other Navies in WW2 website states that the: "Light cruiser DURBAN, destroyers STRONGHOLD, JUPITER, and auxiliary patrol ship KEDAH arrived at Singapore at 0300/12th. They departed before daylight that morning with steamers EMPIRE STAR … and GORGON ... Later that day, in seventeen separate attacks, DURBAN was hit once by Japanese bombing, losing her forward six inch gun with eight ratings killed and many wounded. EMPIRE STAR was also hit by three bombs in Durian Straits. The ships arrived at Batavia on the 13th."

The composition of the convoy is very difficult to pin down. For example, the Straights Steamship Company website states that the steamer H.M.S. Kedah left Singapore on February 14th.

Other accounts put the number of dead at 14 and the number wounded at 37. Elphic argues that both figures may be underestimates. (See the 4C Special: No Prisoners Viewpoints website.)

[18] "[B]y the end of January1942, individual squadron identities had disappeared as units were evacuated … As a result No 243 ceased to exist sometime around February 1942." AA website.

[19] NZETC website. The situation at the Keppel docks in Singapore was chaotic with looting by armed deserters who tried to force their way onto the ships doing the evacuation. About one hundred deserters succeeded in boarding the *Empire Star*. (See the 4C Special website.)

[20] Extract from the 4C website.

[21] The story in Leeson (2000a p. 7) that "Phillips was shot down by Japanese aircraft" on his way to Java seems to be a mis-reading of notes containing the claim that Phillips *shot down* a Japanese aircraft. With so many guns firing at the attacking planes it would be very difficult to establish who actually caused the plane to crash into the sea.

[22] Leeson (1994 p. 608 n. 5 2000a p.7).

[23] Blyth (1978 p. xv).

[24] Blyth (1978 p. xv) and Ibbotson (1993 p. 11). Leeson (1994 p. 608 2000 p. 7), based on conversations with Valda Phillips and correspondence with Dick Lipsey, suggests that the men may have attempted to make an abandoned bus sea worthy enough to sail to Australia.

[25] Dunlop's description of Lt. Airey's attempt to escape from Java by boat provides some idea of the problems involved (Dunlop 1990 p. 69).

[26] Ibbotson (1993 p. 12). Leeson (1994 p. 608 n. 5 2000a p.7) states that the Japanese captured Phillips when the group was betrayed.

Adrian Pagan (email 12 May 2008) writes: "Mention of the falling off the cliff revived a memory that I have of him after he had the stroke. He was paralysed on one side and had to walk with a sort of stick. He went to the seminars that for some reason were located on the 2nd floor of the Coombs building [at A.N.U.]. There was no disabled access and there were two stories of circular stairs. He once said to me that going down those stairs was the scariest thing that he had had to do since the time he jumped over the cliff."

[27] Blyth (1978 p. xv). Jones (2002 pp. 52-53) chronicles the various moves between camps made by van der Post during the period 1943 to 1945. Presumably Phillips also moved between Camp Z and the so-called "Cycle Camp" in Batavia.

[28] Phillips must have been captured at the end of February 1942. The prisoners seem to have been released from Landsop POW camp on 21 August 1942. It is not clear where Phillips was first imprisoned.

[29] Leeson (1994 p. 610 n. 9 2000 p. 15 n. 13

[30] See the Wikipedia article on the Burma railway, Ebury (1995), and the first hand account in Dunlop (1990). Sir Edward E. "Weary" Dunlop (an Australian – like Phillips an extraordinary man) was a surgeon serving as a Lieutenant Colonel in the Australian Army Medical Corps (see Ebury (1994) and Dunlop (1990)).

On 6 November 1942 Dunlop led one thousand Australian other ranks and fifty-four officers out of the Bandoeng POW camp. They were ultimately destined to become slave labour on the Burma railway; many would not survive the ordeal. The British and Australian prisoners at Bandoeng were treated as separate units and were housed separately. If Phillips had not joined the R.A.F.V.R. he might have marched out with the Australians and ended up in Burma.

[31] See Jones (2002 pp. 35, 38-39, 51) and NZETC pp. 180-182.

[32] Ibbotson (1993 p. 13). Jones (2002 pp. 52-53) writes that the Japanese attempted to move the Bandoeng prisoners to Burma or Japan in 1943 but were frustrated in their efforts because of a lack of shipping.

[33] There were also large numbers of Dutch colonial troops and White Russian and Chinese civilians imprisoned in the camp. (Jones (2002 pp 37 and 40) Dunlop (1990 p. 53)).

[34] Wikipedia entry on Bandoeng.

[35] van der Post (1970 p. 38). "… in a climate without seasons in which clouds built up every afternoon and then released their cooling showers …" Jones (2002 p. 52). Temperatures stay in the low 70's throughout the year. The climate is humid with almost daily rainstorms but the rainfall is relatively light by tropical standards, peaking in March when it averages 14".

[36] NZETC websit. See Jones (2002 pp. 35, 38-39, 51).

[37] Ebury (1995 p. 329). Dunlop's *War Diaries* contain drawings of Camp No. 12, including a drawing of van der Post's cottage. Dunlop (1990 Illustrations 2-11 between pages 68 and 69).
[38] Jones (2002 p. 37).
[39] Jones (2002 p. 45).
[40] van der Post (1970 p. 9).
[41] Jones (2002 p. 45).
[42] Jones (2002 p.51). Leeson (1994 pp. 610 and 611 2000a pp. 8 and 9) wonders whether Phillips would have shared the post-WW2 views of van der Post and Dunlop on forgiving the Japanese.
See also van der Post (1970 pp. 35-36). Readers with strong stomachs may consult the accounts of the Japanese treatment of POWs in Lord Russell of Liverpool (1958). King (2005) includes a section on Japanese Military Psychology and the cult of Bushido, which was introduced into Japanese schools as part of the curriculum in 1937. King states that two of the principles taught were: "To be taken prisoner is to dishonour the soldier, his family, the army, and the Emperor" and "Anyone who allows himself to be conquered is an inferior, has no rights, and thus is subject to any treatment the conquerors wish to impose." Hastings (2008 ch. 15 "Captivity and Slavery") provides a characteristically judicious and balanced evaluation of the Japanese treatment of their prisoners.
[43] Jones (2002 p. 35). Jones (p. 43) lists among the diseases prevalent in the camps: "'burning feet', pellagra, beri beri, dysentery, ulcers, optical neuritis". See also van der Post (1970 p. 38).
Ebury (1995 pp. 326-338) covers Dunlop's experience of imprisonment at Landsop before he and his men were moved to the barracks at Bandoeng. Three Dutch prisoners were bayoneted to death at Landsop on 22 April 1942 (Dunlop 1990 p. 13 and Ebury p. 330) for "attempting to escape" but, despite the mention of executions in the NZETC website, there is no mention in van der Post of executions at Bandoeng.
[44] Some of the behaviours of the guards simply reflected Japanese military practice (and the fact that the Korean guards were probably trying to be more Japanese than the Japanese themselves). All military orders (such as "numbering" during roll calls) were given in Japanese and the prisoners had to learn Japanese military drill. The Japanese insisted on cropping the prisoners' hair to what they

regarded as an acceptable length (one centimeter). Bowing and extreme deference to one's superiors were part of Japanese culture; saluting all Japanese irrespective of rank reflected the contemptible status of "warriors" who had surrendered rather than dying honourably. The guards, when they appeared, demanded an exaggerated respect. The first prisoner to see them shouted a warning, then all within sight, whatever their rank and whatever the rank of the Japanese, stood rigidly to attention, saluting or, if without a hat, bowing to the soldier of Nippon when he approached. Failure to stand properly to attention or the omission of any detail from this ceremony would bring down on the head of the offender (and literally on the head) a severe beating. The victim would be lucky if this were given only with the fists. A Japanese once explained to a prisoner that for a guard to slap his face was 'like a mother lovingly correcting her child'. The broken jaws or broken eardrums commonly resulting from these encounters cannot, however, be attributed to the intensity of the guards' affection." NZETC Singapore website.

Rules were strictly and arbitrarily enforced: "failure to observe such regulations brought a beating [slapping] which varied from a few cursory blows on the head with a closed first to a full-dress affair lasting an hour or two, at the end of which the gashes, lacerations, bruises, and possibly internal injuries sustained by the victim often necessitated his admission to hospital." (NZETC website) "Slapping" was standard practice in the Japanese Army although the POWs were sometimes slapped with wooden boards or even iron bars. Dunlop relates an incident in which an very tall, absent- minded, Major forgot to salute a Japanese private and had to bend almost double in order to be slapped by the much shorter Japanese.

However other ranks also made up working parties, which did such things as "unloading railway trucks, moving ammunition and bombs, and clearing up debris." (NZETC website) Some prisoners were forced to work in a sisal plant under dangerous conditions. (Jones p. 43).

[45] Ibbotson (1993 p. 13).

[46] NZETC website. van der Post (1970 pp. 9-10) attributes the good fortune of the inmates of Bandoeng to the fact that the camp was initially administered by the Japanese army "which left [us] comparatively free to regulate our own affairs within the walls of our

prison." The infamous Changi camp complex in Singapore was also relatively benign until May 1944. (Australian War Memorial site Encyclopedia entry on Changi.)

[47] (Leeson 2000a p. 4) Leeson (1994 p. 606 2000a p. 5) quotes from van der Post (1970 pp. 10-11) who writes that "this side of our life was one of my special responsibilities … imprisonment for our men was transformed from an arid waste of time and life into one of the most meaningful experiences they had ever known." Jones (2002 p. 41) writes that van der Post was the "driving force in developing an ambitious education project" and that he was proud of being "Senior Education Officer – although the 'prison university' was not in fact [his] original brainchild".

[48] Lesson (1994 p. 607 2000a p. 6) and Dunlop (1990 p. 96).

[49] van der Post (1970 pp. 37-38) van der Post writes that: "the daily portion of rice, which was almost our only food, fell in three years from five hundred grammes per man to a day to ninety grammes - a fraction over three ounces." Phillips had an aversion to rice after his release from prison.

[50] Jones (2002 p. 44).

[51] Leeson (1994 p. 611, 2000a p. 9). Ibbotson (2008b).

[52] Jones (2002 p. 53). van der Post (1970 pp. 58-60).

[53] There is a plan of the Landsop camp in Ebury (1994 p. 327) and a sketch in Dunlop (1990 p. 9).

[54] See van der Post (2001 p. 38) and Jones (2002, p. 43)). There is a caption on the plan in Ebury (1995 p.327) "normal accommodation 500 native boys".

[55] Jones (2002 p. 53)

[56] Leeson (1994 p.609 2000a p.8)

[57] Blyth (1978 p. xv) van der post (1970 p. 119.)

[58] van der Post (1970). Pages 100-108 and 116-122 of van der Post contain references to the New Zealand officer.

[59] Leeson describes his discovery in Leeson (1994a and briefly in 1994 p.606 2000a p.5). Luck favours the prepared mind.

[60] Leeson (1994 p. 608 2000a p. 5 n.4) quotes van der Post (1970 pp. 48-49): "without the intelligence provided by this radio we could not have lived our life in prison in what, I believe, was the triumphant manner we did."

[61] van der post (1970 p. 101), Leeson (1994 p. 606 2000a pp. 5, 9-10). van der Post (1970 pp. 99-100) writes: "These acorn valves … were the latest thing in radio, and had enabled us to reduce the size of our set over the years to such minute proportions that we could conceal it in a pair of wooden clogs." The "us" in the quotation was Phillips.

[62] van der Post devotes many pages of his book to discussing Japanese psychology and his constant concern, shared by Nichols, that the Japanese would murder their prisoners. (van der Post (1970 pp. 42-46, 56-59, 117, 128-9,130, 144)).

In 1945 the Japanese expected that when the Allies defeated Japan that they would be treated as they had treated the peoples they had conquered or "liberated from colonial rule".

[63] van der Post (1970 pp. 52, 67- 71, 77-79, 133). See also Jones (2002 pp. 53-54.). Dunlop (1990 p.433) describes a similarly desperate plan to try to get a few survivors to tell of the massacre.

[64] Leeson (1994 p. 608 2000a p. 7).

[65] van der Post (1970 p. 103-104).

[66] van der Post (1970 pp. 101-107).

[67] Jones (2002). In 1942 van der Post was an Acting Captain in the British army. After his capture by the Japanese, van der Post seems to have assumed the rank of Lieutenant Colonel – the highest rank that you could hold without being put into a special camp for senior officers. The curious story of van der Post's military rank is discussed in Jones (2002 pp. 28-30, 38-39 and 75-77).

Jones (2002 pp. 20-21) is also skeptical about van der Post's "eloquent" surrender (Leeson (1994 p. 608)).

[68] van der Post (1970 pp. 107-122) and Leeson (1994 pp. 606-7 2000a p.5). The atomic bomb was dropped on Hiroshima on the morning of 6 August 1945. That night there was a new moon. The burglary probably took place on August 3rd. Phillips probably worked on the radio on the nights of August 4th through the 6th when he picked up the Delhi station. Leeson (1994 p. 606 2000a p. 5) writes: "*The Night* refers to 6 August 1945".

[69] van der Post (1970, p. 122). Jones (2002 p. 34) writes that van der Post was "never over-disposed to praise others".

[70] van der Post (1970 pp. 128-129). King (2005) provides an excellent review of the bitter debate among the Japanese war leaders as to

whether to surrender or to fight on to what would in effect be a national suicide.

Leeson (1994 p. 2000a p.) van der Post 1970 (p. 145) Field Marshall Count Hisaichi Terauchi, the Japanese commander in South East Asia, was determined to continue to resist after the Emperor's surrender announcement. The Emperor had to send his brother Prince Chi-Chi Bu to Saigon to persuade Terauchi to surrender[71] van der Post (1970 pp. 134-138) tells how he was informed of the allied victory by senior Japanese officers one of whom remarked: "We Japanese have decided to switch, and when we switch we switch sincerely". Jones points out that van der Post tells the story in such a way as to make it seem that he was the first to know of the Japanese surrender, which would not have been the case.

[71] Ibbotson (1993 pp. 10-11) and Ibbotson (2008a) where she writes that: "Bill may have spent at least a month in hospital in Singapore before being well enough to come home."

[72] Ibbotson (1993 p. 12). On page 6 of her manuscript Ibbotson (1993) writes a similar sentence but using "they managed" about the imprisoned POWs. The context suggests that "they" refers to Phillips and his friend although other prisoners may have been involved. However the risks and consequent need for secrecy would have meant that only a few prisoners would have had knowledge of the radio's existence – Ibbotson stresses that "only a few trusted prisoners knew [about the radio]." Ibbotson (2008) reiterates this point.

Probably only Phillips had the knowledge to see the stolen components as potential radios.

[73] Ibbotson (1993 p. 12). van der Post (1970 p. 14) " …the officer in charge [of a radio]…had been decapitated for what the Japanese regarded as one of the most serious crimes of which a prisoner could be culpable". Dunlop had a conventional mantle radio (2'x1'x9''!) and had a number of narrow escapes while operating it. He was continually warned by the Japanese that as Senior British Officer he would be personally held responsible and executed if they discovered a radio anywhere in the camp.

[74] van der Post (1970) writes: "how the radio was built and run by a few resourceful and gallant young officers…." (p. 48), and " … the radio was built and operated by a few resourceful and gallant young

officers … " (p. 97), and refers to "two of the officers responsible for the set" (p. 100).

On page 97 van der Post writes: "I suspected that among the new group of prisoners … there was at least one if not two other secret radios at work …" The fact that he was unaware of Phillips' first radios is not entirely improbable. Ibbotson (2008a) writes: "It is also obvious that van der Post was not given the … [information about] the position of the set".

It is possible that van der Post did not mention Phillips' earlier work on the radios because he felt that to do so would interfere with his narrative arc since the tale of the secret radios was "a story in itself" van der Post (1970 p. 48).

Ebury (1995 p. 345) writes that a Chinese merchant had supplied five mantle radios to the camp inmates at Bandoeng.

[75] Of course Phillips would have had to have assistance running the radio; at the minimum he would have needed lookouts to warn him of approaching danger

[76] van der Post (1970 p. 101), Leeson (1994 p. 606 2000a p. 5).

[77] Ibbotson (1993 p. 12). In Ibbotson (2008) she reiterates this point: "I am quite definite about Bill doing the listening."

[78] Leeson (1994 p. 607 2000a p. 6).

[79] Ibbotson (1993 p. 6). On page 12 of her manuscript she writes: "The main set was installed under the tiled floor of the kitchen, having above floor level only a bicycle spoke, a large needle (perhaps knitting needle) and the listening piece (probably just an ear piece). Bill said, quite casually – *That's all you had to rip up and hide if you heard anyone coming.* They had a chair over the pertinent spot and having read of Sir Laurens van der Post's account of a hollowed out rocking chair, I believe that this is where the above the floor equipment was hidden. The radio set itself was definitely below the floor as Bill described it. The bicycle spoke was inserted at one corner of a certain tile and was somehow attached to the listening device, and the large needle slotted down at another corner to engage the tuning." (Parentheses and italics in original.) The small differences between the description of the radio in the text and the description of the radio in this endnote may derive from them being memories of different conversations. Ibbotson (2008b) writes that she did not know where the above ground set

was sited and conjectured that it was in the rocking chair because of van der Post's account.

The L.S.E. file containing Ibbotson's Memoir also includes a clipping of the column from *The Auckland Weekly* (dated 13.5.48) about the award of Phillips' M.B.E. Near the end of the column it says: " … many a tale he can tell of secreted wireless sets by which they gained news of how the war was going…". Ibbotson (2008b) believes that the story, which has no by-line, must have been based on notes taken during an interview with Phillips. But Phillips should have been at the L.S.E. in May 1948 preparing to take his Part 2 exams. The interview that uses the relatively rare word "secreted", a term that also appears in Ibbotson's memoir.

In cases where van der Post's and Ibbotson's narratives disagree there is good reason to prefer her account.

[80] Leeson (1994 p. 607).

[81] van der Post (1970 p. 100).

[82] van der Post (1970 p. 101) writes: "henceforth, whenever we had a blitz search, one of us could wear the clogs and walk about in them throughout the search, feeling on the whole safe from detection."

[83]Ibbotson (1993 p. 6 and p. 13). Ibbotson writes that: "The second radio set was built into one shoe of a pair of wooden clogs". This was the final incarnation of Phillips' radios; it is unlikely that it was only the second one that he built.

Garth O'Connell, Assistant Curator, Military Heraldry and Technology, Australian War Memorial, writes in an email to the author (12 May 2008): "I have conducted a search of our collection database and found no other concealed radio clogs within the collection apart from the one you have mentioned in your email relating to Flying Officer Closter. The relic you have mentioned is a 'Secret radio receiver concealed in a pair of clogs: Flying Officer H W Closter, RAF' and its collection number is RELAWM34782.002. This item number is searchable on our online database at www.awm.gov .au".

Simultaneous discovery is commonplace; economists would expect that faced with the same set of constraints POWs would have arrived at similar solutions. See AWM entry on the radios built by F/O Closter under very similar circumstances to Phillips'.

[84] van der Post(1970 p. 103). The quotation from Dunlop's diary suggests that van der Post had known Phillips for at least thirty-four months.

[85] He writes of:" a young Dutch fighter pilot … I regret I cannot remember his name" (1978 p. 13) and later "I regret that I do not remember the name of the first editor of *Mark Time*" (1978 p. 16).

Although there are many minor characters whose names van der Post does remember, there is also the unapologetically unnamed Squadron Leader who was enlisted to take part in the desperate plan to resist if the Japanese attempted to slaughter the prisoners.

[86] Leeson (1994 pp. 607- 608, 2000 pp. 6-7). van der Post also writes that Phillips "built and operated the only really secret radio we had in prison".

[87] Jones writes that van der Post's stories were always designed to "position him at the centre of events …".Jones (2002 p. 5) Leeson (1994 p. 607, n. 3) writes that there had been plans to make a TV mini-series based on Dunlop's book: "in which the 'radio expert' would presumably figure prominently".

[88] Leeson (1994 p. 615 .2000a p .13).

[89] Ibbotson (1993 p. 2).

[90] Ibbotson (1993 p. 7).

[91] Ibbotson (1993 p .13).

[92] Adrian Pagan (email 12 May 2008). The author saw Phillips deliver his inaugural lecture as Tooke Professor. Phillips was clearly nervous but he performed superbly for an hour without a cigarette. Lipsey writes that: "I too heard his inaugural lecture and saw no signs that nicotine deprivation caused him problems over the lecture or the discussion that followed it."

[93] NZETC website.

[94] Dunlop (1990 pp. 97 and 119).

[95] van der Post in Leeson (1994 p. 612 n.13 2000a p. 16 n. 18).

Newlyn (Leeson 2000 p.105) notes that a photograph taken of Phillips when he made his presentation to the Robbins seminar "reveals Bill's tendency to chain-smok[e] whenever he was working, thinking about a problem or declaiming …" The dust jacket of the *Collected Works* (Leeson 2000) shows Phillips with the machine and a cigarette (unlit?) in his hand (the same photograph is reproduced on

p 105). Phillips' cigarette in the photograph in Appendix 3 appears to be unlit.

[96] Ibbotson (2000a).

[97] Leeson (2000a p. 10) speculates that Phillips' reduced research productivity, after giving his inaugural lecture as Tooke Professor in November 1961, was associated with declining health associated with his ill treatment as a POW. Leeson observes that Harry Johnson had remarked on Phillips' habit of "leaving papers on his desk" rather than publishing them.

In the first place, Johnson, a notoriously compulsive author, was simply observing that although Phillips was writing papers that he was not bothering to publish them. It is quite possible that Phillips' well known perfectionism led him to refrain from publishing papers that other academics would have been glad to add to their vitas. Furthermore Phillips may not have had the incentive to publish - L.S.E. was not Chicago. As Holt (Leeson 2000 p. 314) notes Phillips was probably less driven than the very distinguished group of economists Holt had worked with during his career (see endnote 97).

Valda Phillips described her husband as: "someone who always lost interest in finished work. He was always busy – driven by the compulsive feeling that his time was limited – and his thoughts were always on the next project" (Leeson (1994 p. 616 n. 20 2000a p. 17 n. 25). Ibbotson (2008a) writes that "as Val has commented he quickly refocused on the next challenge". So it is likely that the papers remained on the desk because they were problems solved – why waste time writing them up when there were new problems to grapple with?

[98] Leeson (1994 p. 615). The letter is quoted more extensively in Barr (1988 pp. 314-315 reprinted in Leeson 2000 p. 96).

[99] Lipsey in an email (13 February 2008) writes of the addiction theory that: "I doubt it is true".

[100] Laidler (email 13 May 2008) writes: "On the matter of smoking, you leave me unconvinced. First, the extent of Bill's addiction when he gave his inaugural lecture tells you nothing about what it was like when he took his finals. Second, I can't imagine an invigilator of that vintage acceding to a request to go out for a smoke - if it had been possible in 1958 or 59, I would certainly have done it, and I didn't. Nor can I imagine a request to go to the lavatory that turned out to be

a cover for smoking being tolerated more than once. Invigilators didn't have time to hang around out side a stall for 5-8 minutes, quite apart from anything else."

[101] Holt (Leeson 2000 p. 314) writes that Phillips' brilliance was comparable to that of "Friedman, Modigliani, Miller, Markowitz, Muth , Samuelson, and Simon" (all but Muth Nobel Prize winners).

Meade's contribution to the *Collected Works* is titled: "The Versatile Genius" (Leeson (2000 ch. 2) includes the comment that he was: "an unaffected, undemonstrative, commonsensical and versatile genius." Leeson (1994 p. 605 n. 1) quotes the Baumol and Blinder text on Phillips: "one of the most remarkable economists of the twentieth century, and indeed of all time … had he lived longer [he] might well have won a Nobel prize". Leeson (1994 p. 605) quotes a letter from W.D. Borrie (18 November 1992): "He was a most remarkable man, extremely simple and straightforward. He was a real genius … [who] always saw the main point at issue, spoke of it with the utmost direction and with the simplest possible language, and produced comments and suggestions about it which were somehow obvious when he expressed them, but which everyone else had somehow or other overlooked or had muddled up trying to be clever …".

[102] Barr in Leeson (2000 p. 91).

[103] Newlyn in Leeson (2000 p. 31).

[104] This and the subsequent quotation is taken from Newlyn ch.8 in Leeson (2000 p. 34).

[105]Blyth (1978 p. xv) quotes Phillips' rueful comment that he: "scraped through in 1949 and 'even for a scrape a few kind friends on the examining board had to give a push'." It seems that 40 points were necessary for a pass, 50 for a lower second, 60 for an upper second, and 70 for a first class on any paper. At least this was true when the author was an academic in the U.K. in the 1960s. Barr (email 31 March 2008) agrees that these were probably the cut-off points when Phillips took his final exams.

[106] There is no mention of chain smoking in the reports although tutorials would have usually lasted for about an hour.

[107] Letter 26 July 1978. Lipsey writes that although Phillips "believed in high-powered econometrics [he] was opposed to rigorous formulations of simple (naïve) theories ". He also writes "Bill was

opposed to the mathematical reworking of essentially simple economic theory" (email 12 February 2008).

[108] Phillips' skill with his hands and his ingenuity are well known. Dunlop (1990 p. 61) writes: "An attempt is to be made to lay on a special hot drink in the evening" which presumably refers to the immersion heater that Phillips invented and which made the lives of his fellow POWs so much more comfortable. See Leeson's quote from van der Post (Leeson (2000a p. 608)).

[109] The first paragraph of his letter to Robertson (Appendix 7) modestly downplays his knowledge of economics. It is surprising that someone who published a major paper in *Economica* in August 1950, and who so confidently marshaled the sophisticated economics in the letter to Robertson, could barely pass the economic theory paper fifteen months earlier.

[110] Leeson (1994 p. 611 2000a p. 9) attributes Phillips' decision to study social science rather than to practice as an engineer to Phillips' experiences as a POW. Leeson quotes Laidler: "it was 'common knowledge' that Bill's interest in the social sciences grew out of his wartime experiences". Lipsey (email 12 February 2008) writes: "I am sure that I knew Bill better than any other LSE staff member of my generation as I worked closely with him for the year that I was working on my Phillips curve article. He talked relentlessly about many matters (but little about his POW experiences except to mention the radio). It was NOT my understanding that his interest in social sciences grew out of his wartime experience. So that makes David's statement about what was 'common knowledge' somewhat suspect."

[111] Ibbotson (2008a). Phelps Brown (Leeson (2000 p. 20) writes: "I also know that his employment, when he first came to London before the war, as a supervisor of a gang laying electrical cables, confronted his always active and inquiring mind with issues of industrial sociology."

[112] Solow in his Nobel autobiography writes: "Like many children of the Depression, I was curious about what made society tick. My first studies were in sociology…and anthropology…as well as elementary economics." Nobelprize.org

[113] Blyth (1978 p. xiv). "He had been sampling non-technical education at the Regent Street Polytech [sic] and after deciding to

study economics he signed on at the L.S.E. in July 1939 to start as a part-time student in October. War came and Bill, in a reserved occupation, duly attended what remained of the London branch of the L.S.E." It is possible that the time Phillips spent at the Regent Street Polytechnic was necessary to prepare for the entrance exam.

[114] The courses that Phillips took are listed in Appendix 6.

[115] Blyth (1978 p. xv). Maurice Ginsberg was the head of L.S.E.'s Sociology Department in the 1930s and 1940s. Ginsberg took a very philosophical approach to sociology, and the courses did contain much discussion of ethics. The 1946/47 L.S.E. Calendar's list of sociology courses included: "Comparative Morals and Religion", "Ethics" and "Social Philosophy".

Phillips time allocation turned out triumphantly but probably only by chance – it was not what most tutors would have encouraged their students to do. (Mick Jagger, briefly an L.S.E. student, also ignored his tutor's advice and left L.S.E. to devote himself full time to a rock band without any apparent financial loss.)

[116] Blyth (1978 p. xv).

[117] Barr (Leeson 2000 pp. 90-91).

[118] Letter to L.S.E. Registrar 8 September 1947. Phillips' sideline running film shows in New Zealand demonstrates his entrepreneurial instincts. (Blyth 1970 p. xiii and Ibbotson (1993 p. 7).)

[119] Blyth (1978 p. xv) writes that: "a modest business was emerging and Bill arranged for a plastics firm in Finchley to make the machine." Abba Lerner became Phillips' American agent – an unlikely pair of business partners.

[120] Barr in Leeson 2000 p. 93.

[121] Ibbotson (2008a). Equivalent to £10,000-£12,500 and £6,250in 2008 prices.

[122] Dorrance (Leeson 2000 p. 115).

[123] Dorrance (Leeson 2000 p. 115).

[124] Blyth (1978 p. xiv). The next two paragraphs paraphrase and quote from Blyth.

[125] Blyth (1978 p. xv). (Is it possible that this was the same couple with whom Phillips boarded before WW2?) The S.O.A.S. records show that Phillips was enrolled in the Chinese (Mandarin) class in the 3rd term of 1945-46 and Chinese (Mandarin) and Chinese History (I) in the 1st term of 1946-47. (Unfortunately the records of the School of

Slavonic and East European Studies, where Phillips studied Russian, do not go back to 1946.) In order to read the classic Chinese novels Phillips would have had to be able to read Mandarin fluently. Leeson (1994 p. 605 n. 1 2000a p. 4) quotes Laidler who wrote that Phillips spoke fluent Cantonese to waiters in a Chinese restaurant in Chicago in 1963.

[126] Ibbotson (1993 p. 14): "However, on returning to England he sat exams and became an Associate of the Institute of Linguists (see newspaper report 15 December 1949) this is the only record I have of his A.I.L. and he does not seem to have told others about it." The column is headed "FORMER TE REHUNGA LAD BECOMES AN INVENTOR" and has a holograph "15.12.49 For Carol and Ken".

The Institute of Linguists (IoL) is now the Chartered Institute of Linguists. The Institute currently offer courses equivalent to first degree and M.A. levels. (Email from Ms. Hilary Maxwell-Hyslop, Director of Examinations, IoL Educational Trust, Chartered Institute of Linguists 28 May 2008).

[127] Ibbotson (1993 p.9).

[128] Ibbotson (2008b) writes that Phillips would have studied Latin and French up to "University Entrance level" at Dannevirke High School. Phillips (probably uncharacteristically) adds M.B.E., A.M.I.E.E. after his name. The Registrar was not impressed.

[129] Leeson (2000a p. 3).

[130] Ibbotson (1993 p. 8).

[131] Ibbotson (2008b).

[132] Ibbotson (2008b). " 'Dannevirke High School centennial, 1903-2003' … says that in '1932 only 25% of students sat University Entrance (Matriculation) and few went on to university'." Email from Jocelyn Chalmers, Librarian, Research Centre, National Library of New Zealand (19 March 2008).

[133] See Phillips' letter to D.H. Robertson in Appendix 7.

[134] Blyth (1978, p. xiii). The mathematician turned theoretical physicist, Freeman Dyson, taught himself differential equations by working his way through Piaggio's textbook. (Dyson 1979 pp. 11-15).

[135] Barr in Leeson (2000 p.112).

[136] Unfortunately Ibbotson (2008a) writes that "Bill was not a letter writer …" and it seems unlikely that any letters he did write will have survived.

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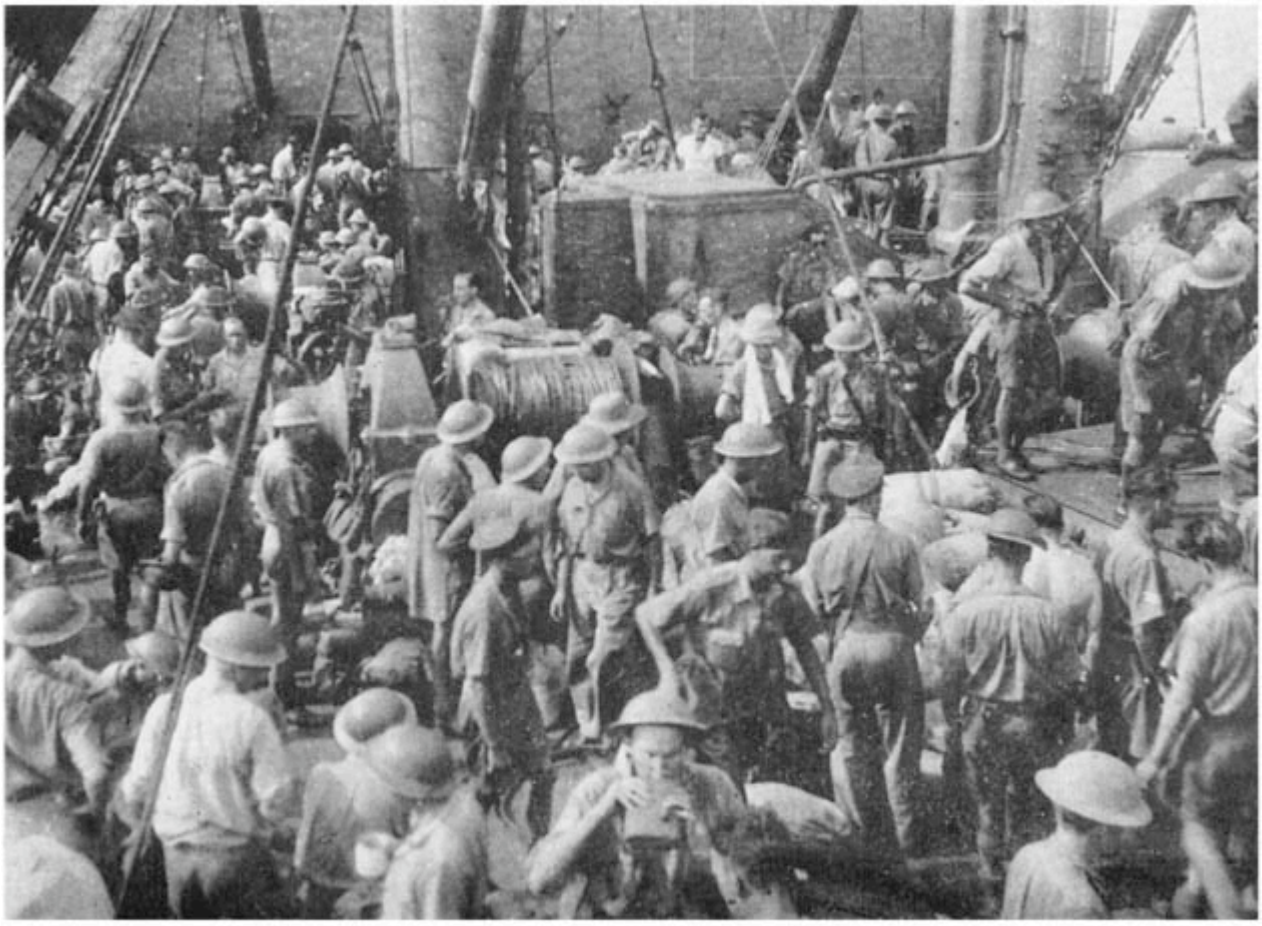
APPENDICES

APPENDIX 1: ON BOARD THE EMPIRE STAR



On board the *Empire Star* after leaving Singapore (*see pages 93–4*)

From the NZETC website p. 93

APPENDIX 2: BANDOENG POW CAMP

The prisoner-of-war camp at Bandoeng was located in the barracks formerly used by Dutch infantry units. As it soon contained several thousand prisoners of different nationalities, each national group was organised by one of its senior officers, and in the early stages the administrative control of the whole camp was entrusted to the senior medical officer.[1] This officer and the officer in command of the British group succeeded at the outset in exacting from the Japanese certain standards of treatment, which remained in force almost

throughout the camp's history and made conditions there better, in the opinion of most prisoners, than they were in most other Japanese prisoner-of-war camps. The medical and dental care of the prisoners at Bandoeng was assured by a large number of medical and dental officers, though there was the usual difficulty in getting drugs and equipment as most of it had been confiscated by the Japanese. A hospital was set up in the camp, but serious cases were evacuated to the Tjimahi hospital nine miles away.

The ration of food at Bandoeng consisted mainly of rice and dried potatoes, with some green vegetables and a small quantity of meat.[2] Though better than that at many other camps, especially in later periods, this ration had the deficiency in protein, fats, and vitamins (especially the B complex) … noted in the diet supplied in other Japanese camps, and after a few months proved a similar source of malnutrition and deficiency diseases. Fortunately the Japanese began to pay both officers and men, and it became possible to establish a camp fund through which purchases of eggs, yeast, and a type of bean rich in vitamin B complex were made. Besides being used for patients in the camp hospital, these extra supplies were sufficient to make a full camp distribution. For a while each man received an egg a day, and it became possible for various sections of the camp to open 'cafés' where those with extra money could buy odd meals, ranging from coffee and a biscuit to eggs and bacon or steak, eggs and chips. Once the camp fund had been established the canteen was excellently supplied: 'one could order anything from a choice steak and the onions to go with it, to a pot of gilt paint and crayons for the Art School, and get them', was the summing up of one of the inmates at this period.[3]

The senior officers in Bandoeng camp appear to have set from the beginning a high standard of camp discipline and morale. Besides insistence on tidiness and cleanliness and general obedience to camp orders, this usually involved the provision of mental recreation to take the place of the work and leisure activity that would have been the normal routine of those on active service before their capture. At Bandoeng the educational classes, the library, and the theatre productions appear to have all been very good. Religious services for all denominations were held in the camp theatre. A daily newspaper entitled Mark Time was typed and displayed on the

camp notice-boards: besides items of news and commentaries it contained results of raffles, advertisements of concerts, local gossip, and illustrations. A more elaborate monthly edition contained original articles, stories, and verse.

The news in the local Malay-language newspaper consisted largely of Japanese claims of military successes, sometimes patently exaggerated, especially in the numbers of ships sunk and aircraft shot down. There were, however, in the camp a number of concealed wireless sets, on which various men listened in regularly and reported the news to senior officers. It was considered advisable, in order to avoid discovery of the sets by the Japanese, not to publish this news to the camp generally but to allow most of it to circulate indirectly without mentioning its source.

The working parties from Bandoeng consisted mainly of daily labour gangs for unloading railway trucks, moving ammunition and bombs, and clearing up debris. The Japanese discipline was strict, often illogical and sometimes brutal. Clipping of the hair to a length of one centimeter, numbering and giving all military orders in Japanese, saluting all Japanese ranks: failure to observe such regulations brought a beating which varied from a few cursory blows on the head with a closed first to a full-dress affair lasting an hour or two, at the end of which the gashes, lacerations, bruises, and possibly internal injuries sustained by the victim often necessitated his admission to hospital. One or two who attempted to break camp were publicly executed.

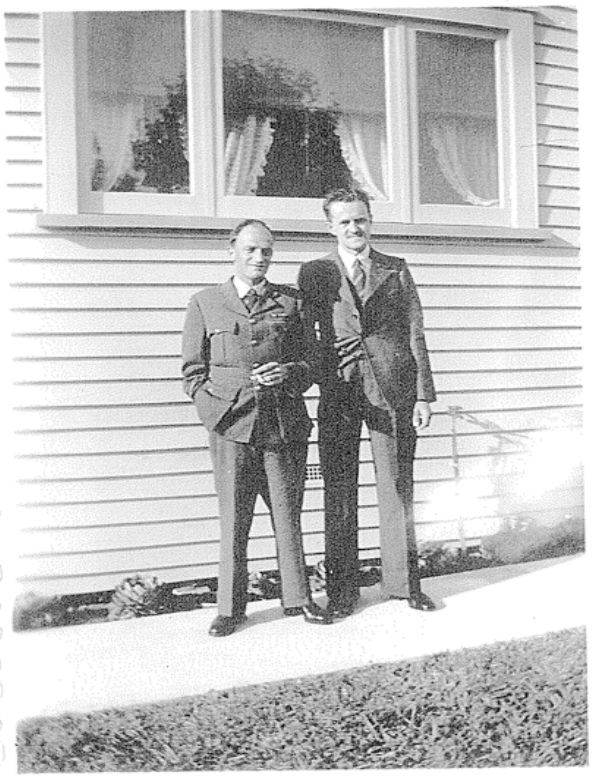
[1] Lt-Col E. E. Dunlop, AAMC.

[2] Estimated at 2000 calories daily by Lt-Col Dunlop, 'Medical Experiences in Japanese Captivity', in British Medical Journal, 5 October 1946.

[3] Flt Lt R. D. Millar, DFM, Narrative of personal experiences… in the Far East.

(Footnotes 2 and 3 renumbered). New Zealand Electronic Text Centre II: Early Prisoner-of-war Camps in the Far East pp. 180-182.

APPENDIX 3: PHOTOGRAPH OF PHILLIPS WITH HIS BROTHER-IN-LAW TAKEN AFTER PHILLIPS RETURNED TO NEW ZEALAND.



APPENDIX 4: THE BURGLARY

The narrative in this Appendix is stitched together from van der Post (1978) pp. 101-103, 105-107.

If only we could now replace the damaged parts, or find other-equivalents of the same size, we could operate the radio once

more. The gifted young New Zealand officer - a radio expert in civilian life who had been responsible for reducing the set to its final minute form, and had proved himself capable of operating it for some eighteen months without any loss of nerve and with a real if strange enjoyment which I could not share - had impressed upon me how little he needed either to make the set operative again or to build a new one.

Donaldson, who was in the know, thought he had an answer. The Japanese lieutenant commanding the camp at the time had, among his own private supply of loot from the world outside, one of the most luxurious and up-to-date radiograms. It stood in a room leading off from his office, … he was continuously calling on us to provide technicians to examine [it] and make [qu]ite certain that [it was] still in good working order. ....

In the course of discussing with [Donaldson] what we needed to put the radio right he said at once, without hesitation:

"Why, it's very simple, I can get all these things from the camp commander's radiogram."

I remember demurring … .

Donaldson replied to my doubts that he would not be such a fool as to remove the parts we needed from the gramophone without replacing them with our faulty ones. He would merely, he said with another schoolboy grin, "effect an entry" - as the British police term burglary - into the camp commander's office and when he was sent for, as no doubt one day he would be, by the Japanese commander, he would carefully examine the gramophone and if necessary persuade the commander that some of its parts had deteriorated and needed replacement, and get him to obtain them from the world outside.

This thought obviously pleased Donaldson immensely because I remember his smile of schoolboy mischief and his saying: "That way we will not only please the lieutenant but make certain that we have another supply available in case our set goes wrong again."

So one night the three of us, the New Zealander I have mentioned, Donaldson and I crept out of our mosquito nets. Donaldson's net was next to mine, the New Zealander's was in the corner farthest away but nearer the gates of the camp. His role was to sit at the entrance to the quarters with his feet in a basin of water as if he could no longer endure the pain of neuritis which malnutrition had inflicted on so many of us.

This consequence of malnutrition was known to the troops as "burning feet". It could be so painful that one often saw men kept awake by it, sitting all night long with their feet in cold water in order to relieve the pain. The sight of the New Zealand officer in this position therefore would not have struck any passing guard as unusual. In his position nearest to the gates his particular task was to listen for sounds of any night patrol gathering to enter the camp. Should that happen, he was immediately to get up and walk towards the latrines, pass by me and tap me on the shoulder and then go on to join the twenty-four-hour queue patiently waiting their turn at the far end of the camp.

I myself was to stand in the shadows of the wall immediately outside the room which housed the camp commander's trove of loot. I had arranged that, in case of danger, I would tap three times on the window-pane and Donaldson would remain hiding in the room until I rapped three times on the pane again. I myself, having given him the first warning, meanwhile would do what the Australian [sic] officer had done and join the queue outside the latrines until the danger had passed. Should there be a surprise night search and the whole camp be turned out of their barracks I had undertaken to get the whole group of officers within my room to flock and mill around the incriminating window, and so provide a screen for Donaldson to come through it without being detected by the guard.

There were obvious snags in all these arrangements but it was the best that we could do. To Donaldson's and my amazement we found the window to the room unlatched. Donaldson raised

the window silently, as if he had been a professional burglar all his life, went through it, closed it as silently and vanished from sight.

He was gone for close on half an hour I think, and it was a long, long half hour indeed….

I must have been standing there for some twenty minutes, the tension in me mounting, wondering why Donaldson should take so long-although he had warned me that, working in the dark at so complicated a machine, he would inevitably need time-when suddenly the noise of a car approaching the gates at great speed broke the silence. The car drew up at the gates abruptly, the brakes screaming from the friction of the speed at which they had been applied.

A loud "Kerei!"-Attention!-rang out from the guard commanders.

I heard the guard tumbling out hurriedly, forming up outside the gates and slapping the butts of their rifles as they came to attention. This sort of thing had happened before and could mean that either the camp commander had arrived for a perfunctory inspection of his guard to satisfy himself that they were doing their duty or for a blitz search of the camp. On this occasion I immediately feared the worst. At any moment I expected the New Zealand officer, who was in a position to hear and interpret the detail of sound that followed better than I could, to appear and tap me on the shoulder; and then to see Donaldson, who must have heard the sounds as clearly as I did, and was in the most vulnerable position of all, coming through the window with his work uncompleted.

But neither the New Zealand officer nor Donaldson lost their nerve. Both remained at their respective posts and although a great deal of muffled sound and shuffling still went on in the guard room and voices continued chattering by the gates, the gates themselves remained shut. Ten minutes later there was a slight tap at the window, the window was silently raised and

Donaldson climbed through it quickly, shut it as silently and together we walked off in the direction of the latrines.

As we walked towards the queue of waiting men I could tell how great the tension had been for Donaldson because the news he had to communicate to me in a whisper came out of him like an explosion of breath from a person who had dived deep into dangerous waters and had been forced to hold his breath for too long.

"I've done her, the bitch, Colonel!" he gasped, "I've done the bitch! We've got all we need! "We had hardly reached the queue when a night patrol entered the gates.

APPENDIX 5: PHILLIPS' TUTORS' REPORTS

Phillips' academic file provides us with information about his advisors' evaluations of his academic ability and "diligence". (No doubt there was some leeway given to the ex-serviceman when reporting to the Ministry of Education.) L.S.E. advisers filed reports on their advisees at the end of each ten week term (Michaelmas **M.T.**, Lent **L.T.**, Summer **S**.**T.**). These reports covered two areas: Diligence & Progress (D&P) and Ability and Personality (A&P). Only the 1946-47 Reports are complete; the ones for 1947-48 and 1948-49 seem to refer only to the Michaelmas term. Becaues of their historical significance the Reports are quoted in full below. (The initials of the tutors are difficult to decipher.)

1946-47

M.T. D&P Satisfactory.

A&P A quiet and retiring person who posses more ability than he is willing to acknowledge. He possibly feels himself a bit different from the rest of the class; he is much older and more mature. I think he possesses solid qualities. Dr. Blackburn.

L.T. D&P Seems to find it difficult to settle down and asked to be excused further classes while he works for his Inter. He is out of his age group with the first year finalists.

A&P About average ability. Lacking in self-confidence. A

pleasant, mature man though *he possibly may not do well in exams. (Emphasis added.)* Dr. Blackburn.

M.T. D&P Satisfactory.

A&P Good student with a well developed background. Should have a satisfactory career at L.S.E.

L.T. D&P Phillips is finding it hard to settle down after a long and somewhat more adventurous diversion. By restricting his study to the Inter. Exams he has to take, I think he will succeed in fitting more easily into the student pattern

A&P His ability is difficult to judge as he is mature and travelled but I believe that it is at least average. Personality reasonably positive.

S.T. D&P Has settled down to his work with enthusiasm.

A&P Ability somewhat above average. Personality positive. A good student who should have no difficulty with his future studies. Mr. Gillies

M.T. D&P Works hard, tries to think but is distrustful of "academic" ideas. Perhaps too resistant.

A&P Quite keen, not very well adjusted to school. Seems to feel that age discrepancy between younger students and himself – also discrepancies in experience – put him into a special category which makes him trustingly defensive. A bit compulsive. Mr. Shils

1947-48 Adviser Professor [Maurice] Ginsberg

M.T. D&P Good: Much improved over last year. Agreed (J.G?)

A&P A rather good intelligence, slowly overcoming feelings of inadequacy related to age in relation to younger students but still something of a psychological problem (slightly schizoid traits.) However more relaxed than last year. Has keen insight and good reasoning ability.

L.T. D&P Ditto mark A&P Blank

S.T. D&P Ditto mark A&P Blank

1948-1949 Adviser Professor Ginsberg.

M.T. D&P Good progress. Less negative than several years ago and more capable of incorporating new ideas. Good rigorous mind.
A&P Thinks clearly with a good focus and sense of relevance. Still rather tense. J.T Agreed J.L.(?)
L.T. and **S.T.** blank.

Phillips' Ph.D. dissertation (for which he was awarded the Hutchison Medal in 1954) was supervised by James Meade and James Durbin. In his report for 1951-52 Meade writes: "He is working intensively on his dynamic models. As Mr. Phillips is the man to whom I turn for my own instruction on this subject, I feel that further comment would be out of place."

APPENDIX 6: 1946/47 B.SC.(ECON) – SPECIAL SUBJECT SOCIOLOGY REGULATIONS

INTERMEDIATE
Part I
1. Economics, Analytical and Descriptive 2 Papers.
2. Geography 1 Paper.
3. Mathematics or Logic 2 Papers
4.French or German. 2 Papers.
(Dictation or orals for the language papers.)
We know that Phillips passed French in June 1940.

Part II
1. English Economic history 1 Paper.
2. British Constitution 2 Papers.

THE FINAL
I Economics
(a) Principles of Economics 1 Paper. 41
(Passed)
(b) Applied economics 1 paper. 31
(Failed)
(c) Economic History since 1815, includes

England and the Great Powers	1 Paper.	34
(Failed)		
II Alternative Subjects	2 Papers.	
Phillips chose		
Statistical Method		59
(Passed)		
and Scientific Method		48
(Passed)		
III Special Subject: Sociology	3 Papers.	
Theories and Methods of Sociology		56 (Passed)
and chose		
Social Psychology		61
(Passed)		
and Social Institutions as electives.		48
(Passed)		
IV Essay	1 Paper.	55
(Passed)		
V Languages	1 Paper.	

APPENDIX 7: LETTER TO D.H. ROBERTSON

12, Bedford Place, London, W.C.l. 19th. Sept. 1950.

Dear Professor Robertson)

May I thank you for taking the trouble, in your letter to Professor Meade, to comment on my "Economica" article about mechanical models? Before replying in detail, I should explain that my knowledge of the subject and the literature on it is very limited. I hit on the idea of making a machine before I knew much about economics and have been so busy since then making the thing go that I haven't had much time for further study. So I hope you will forgive me if in my article I have not done full justice to your work.

I shall take the points raised in your letter in order.

(1) I think that money held from precautionary motives should, as you say, be in M2, since this is surplus to the minimum required for current transactions, and the rate of interest represents the opportunity-cost of holding it. I feel, however, that the concept of money held from speculative

motives is also useful, particularly in explaining short-term fluctuations, and that in a detailed analysis of the relationship between the quantity of M2 and the rate of interest both motives would have to be considered.

(2) I agree that the most important thing is to break the identity between Y and E, so that a process analysis can be used. In my first model I had followed you in using an income-expenditure lag, and only after reading Metzler's article changed the labels to make it an expenditure-income lag. I am afraid I had not noticed the passage in Pigou's "Theory of Unemployment", estimating the ratios of the lags as 10 to 7. I think there is no doubt that both lags should be included, and perhaps some others as well; but after all the model is intended only for elementary exposition, and to complicate it unduly would defeat its purpose.

(3) I do not think there is any absolute criterion for judging between a continuous and discontinuous analysis. It is rather a matter of which technique is more appropriate in a particular case. In modern nuclear physics it is found that the individual particles behave in a rather erratic way so that, in so far as a mathematical description of their movements is possible, it must he in discontinuous terms. But if one is studying aggregates consisting of millions of particles, the individual eccentricities average out to give relationships, fundamentally of a statistical character, which can be most easily and accurately represented by differential equations. So in economics, the payment of dividends by a company, for example, may be an annual event; but if a large number of companies pay dividends on different days of the year, any general tendency to a change in aggregate dividends paid, if it can be expressed mathematically at all, will be more accurately represented by a differential equation than by a difference equation. And in dealing with monetary theory it is, I think, pretty generally the case.

(4)&(5) It may well be that I failed to obtain a clear understanding of either the liquidity preference or the loanable funds theory. But I do not see how they can be quite the same thing. To mention only one point, you yourself (Essays p. 18 & 19, and para. 5 of your letter) take Keynes to task for implying that an increase in thrift would only lower the rate of interest "through" reducing Y. The results obtained from my model certainly

correspond closely to the accounts given by you on pages 15 and 19 of your Essays, and it may be that the loanable funds theory and my model are different ways of showing the same thing. Yet it seems to me that by distinguishing between stock and flow schedules (which, incidentally, can only be done in a continuous analysis), and by putting income effects into the model instead of having to allow for them by making shifts in the curves, the process is at any rate shown more clearly, and the different parts of the theories integrated into a wider formal system.

(6) In the first model I made there was a 'propensity to invest" curve instead of the accelerator, so that investment could be made a function of income. Higher income was then accompanied by higher investment as well as by higher savings, which, I think, meets your requirements. As a matter of fact, in the new model the same thing happens. At high levels of income (and therefore of saving) the effective weight of the accelerator float even in equilibrium, is less than at low levels, since the sides of the float are then immersed in water, so that the investment valve is further open. Investment therefore varies with the actual level of income as well as with the rate of change of income, so that savings and investment are correlated through income effects. I did not explain this in the article, as it seemed involved enough already.

(7) I agree entirely with your criticism of the multiplier formula under conditions off full employment. The machine can deal with this, in a rather clumsy way. The change when full employment is reached is reflected in a change n the marginal propensity to save and the marginal propensity to invest. In the usual mathematical treatment of the multiplier this change cannot easily be introduced because the mathematics becomes difficult. But the machine will deal with curves of any shape.

Savings being a function of real income, when prices begin to rise the propensity to save curve, expressed in money terms, will turn back and become a straight line through the origin. If the price rise is so great that confidence in the monetary system is lost altogether, savings will actually drop to zero. The propensity to save curve expressed in money terms is therefore somewhat as shown below, and it is this curve that should be put on the machine.

Also, when prices begin to rise investment will become more profitable, so that the "propensity to invest" curve will shift outward as shown above. In the original machine, which had provision for a propensity to invest, this curve could be put on. In the new machine the investment valve can be adjusted by hand to give the required income-investment relation.

If now income rises beyond the region of full employment, the slopes of the curves, and therefore the multiplier, change. When the stage is reached at which, for a given increase in income, investment increases more than savings, the process becomes "explosive". (Out of respect for the University buildings and staff the "explosive" effect is limited on the machine to allowing the water in the main tank to overflow continually into a spare tank at the back, the income reading being hard over to the end of the scale).

Machines could be designed by a competent engineer (but not by me!) to deal with far more complex price effects than this, if economists could agree on what they wanted to happen. The technical means available are by no means exhausted by the rough gadget I describe in my article. But I personally think it would not be worth while to take the thing much further. I shall be very glad myself when I can drop mechanics and do some economics instead.

I am sorry this reply has become so long. Thanking you again for your interest in the affair,

Yours sincerely,
[Signed with a flourish]
A.W.H. Phillips

P.S. If you are in London any time and would like us to put the gadget through its paces for you, please let Professor Meade or me know.

[Diagram deleted.]