

Middle Eastern Studies

ISSN: (Print) (Online) Journal homepage: https://www.tandfonline.com/loi/fmes20

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To cite this article: Benny Morris & Benjamin Z. Kedar (2022): '*Cast thy bread*': Israeli biological warfare during the 1948 War, Middle Eastern Studies, DOI: 10.1080/00263206.2022.2122448

To link to this article: https://doi.org/10.1080/00263206.2022.2122448

Published online: 19 Sep 2022.

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MIDDLE EASTERN STUDIES
https://doi.org/10.1080/00263206.2022.2122448

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'*Cast thy bread*': Israeli biological warfare during the 1948 War

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Following the first Arab-Israeli war, of 1948, rumours surfaced that the typhoid epidemic that struck the Arab town of Acre days before its fall on 18 May, had been caused by bacteria poured into the town's water works by agents of the Haganah, the main Jewish militia. Later that month, the Egyptian government announced that it had caught two 'Zionist' operatives as they were trying to infect wells near Egyptian-occupied Gaza. The two episodes have been mentioned in several books[1] and discussed by Sara Leibowitz-Dar, Avner Cohen and Salman Abu Sitta in articles published some twenty years ago, based mainly on interviews.[2] But real-time Israeli documentation of the country's clandestine biological warfare in 1948 remained closed to researchers and over the years government agencies have tried to suppress information on the subject. For example, crucial words in Ben-Gurion's diary for 1948, published in 1982 by the Defense Ministry Press, were deleted.[3]

The code name of the biological warfare operation – 'Cast Thy Bread' (in Hebrew: *shallah lahmekha*, from 'cast thy bread upon the waters' (*shallah lahmekha ʿal pney ha-mayim*, Ecclesiastes 11:1)) is partially mentioned, as *shallah*, in a memoir published in 2000 by Arieh Aharoni, a Palmah officer in 1948, who unequivocally asserted that the operation aimed at poisoning water used by the invading Egyptian army.[4] The full code name is mentioned in the 2003 article by Abu Sitta, who received the information from Israeli military historian Uri Milstein.[5] Once aware of the code name, we were able to trawl through hundreds of files in the Israel Defense Forces and Defense Ministry Archive (henceforward, IDFA), produced by military units operating in areas that we thought might have been targeted in the operation, and to identify relevant documents. Israel Government censors, apparently unaware of the significance of the code name and confused by the cryptic language generally used, let them through. Furthermore, we found a crucial letter by David Ben-Gurion from 14 May 1948, preserved in a private archive, and used unpublished – and highly revealing – interviews with two key figures, Ephraim Katzir (Katchalsky) and Shemarya Guttman. In addition, a privately printed memoir by Rafi Kotzer, commander of an elite Israel Defense Forces (the Israeli army, henceforward IDF) unit in 1948, also supplied useful information. Taken together, these documents revealed that the Acre and Gaza episodes were merely the tip of the iceberg in a prolonged campaign, designed initially to prevent Palestinian Arab militiamen from returning to their villages from which they harassed Jewish settlements and road traffic and, later, to hinder the Arab states' armies that invaded Palestine on 15 May 1948.

In the following pages we offer a step-by-step reconstruction of Israel's top secret biological warfare campaign during the 1948 War and describe how, if at all, it affected the war-making. Along the way, we shall show how dissenting voices, at various levels of government and army, hampered the unfolding operations. However, due to the fragmentary nature of the available sources, ours remains a skeletal reconstruction. For instance, we were unable to access any

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material on the science side of the *Cast Thy Bread* campaign: on how and what equipment and knowledge of biological warfare was acquired in Europe and the United States and how the requisite germs were acquired or produced and weaponized and where this was done. At several points, we have been constrained to offer assumptions, all duly presented as such.

In April 1948 the gloves came off. Since 29 November 1947, when the UN General Assembly passed Resolution 181, proposing the partition of Palestine into two states, and the Palestine Arabs had launched hostilities, the Jews had been on the defensive. They had accepted the partition resolution – and Palestine's Arabs had not. Backed by the surrounding Arab states, their militiamen, based in the country's 750-odd villages and towns, continuously attacked Jewish settlements and convoys, causing more than 1000 deaths. The Jews periodically retaliated. The British, who had conquered the country from the Turks and ruled it since 1917/18, were scheduled to depart on 15 May 1948, and the Arab states had announced that they would invade when the British left. For the country's 650,000-strong Jewish community – called collectively the Yishuv (Hebrew for 'the settlement') – the future looked grim. March 1948 had seen a series of major military setbacks, with large Haganah convoys destroyed in ambushes along the roads, mostly around Jerusalem. The Jews feared that, should the Arabs win, a second Holocaust would result, a bare three years after the first had ended.[6]

On the night of 31 March, David Ben-Gurion, the leader of the Yishuv and its de facto defence minister, in political charge of the Haganah, summoned an emergency meeting of his military aides. He was especially worried about the fate of Jerusalem's 100,000 Jews. The city's western, Jewish half was besieged by Arab militiamen, who dominated the Tel Aviv-Jerusalem road, the Jews' main supply line. Ben-Gurion insisted that the Haganah secure the road and push through a number of large supply convoys; the militia's commanders – who would have preferred that their crack troops engage the Arabs elsewhere – reluctantly agreed. As it turned out, Operation Nahshon, launched in effect on 3 April with the capture of the Arab hilltop village of al-Qastal just west of Jerusalem, marked the Yishuv's turn to the offensive and was the first in a six-week-long series of country-wide operations in which the Palestinian Arab militias were crushed and the Yishuv braced for the impending pan-Arab invasion. The invasion, by the armies of Egypt, Jordan, Iraq and Syria, duly began at sun-up on 15 May. Nahshon was the first operation in which the Yishuv captured and held – as it turned out, permanently – swathes of Arab-inhabited territory designated in the United Nations (UN) partition resolution for Arab sovereignty.

A week into Nahshon, after the capture of a handful of sites, the Haganah leadership decided on a series of measures to prevent the return of the Arabs – crucially, militiamen – to their villages on either side of the Tel Aviv-Jerusalem road. The main measure adopted was levelling the villages, partially or completely; this usually included the destruction of the village wells. Indeed, well destruction had become routine in the tit-for-tat characterising the first months of the war. For example, a Haganah operational logbook, under '21.2.48', stated: 'Last night the Arabs blew up the well of [Kibbutz] Kiryat ʿAnavim [just west of Jerusalem]. Part of the building was destroyed. In the retaliatory strike immediately carried out, a unit of the 6th Battalion attacked [the nearby Arab village of] Bayt Naquba and blew up the village spring.'[7] A similar case was recorded a month before: a Jewish convoy travelling through the Arab village of Burayr in the south was ambushed. The convoy stopped, the troops dismounted and then 'blew up the village well'.[8]

But bulldozing or blowing up houses and wells was deemed insufficient. With its back to the wall, the Haganah upped the ante and unleashed a clandestine campaign of poisoning certain captured village wells with bacteria – in violation of the Geneva Protocol of 1925, that contained a blanket prohibition of 'the use of bacteriological methods of warfare'.[9] During Operation Nahshon, it was unclear whether the Haganah would be allowed – by the British, who still ruled the country; the United Nations; or the Arabs – to permanently hold captured village sites; besides, the Haganah lacked troops to garrison them. The aim of *Cast Thy Bread* (henceforward referred to as *CTB*), like the demolitions, was to hamper an Arab return. Over

the weeks, the well-poisoning campaign was expanded to regions beyond the Tel Aviv-Jerusalem road and included Jewish settlements captured or about to be captured by Arab troops, and then to inhabited Arab towns, to facilitate their prospective conquest by the Haganah or to hinder the progress of the invading Arab armies. Lastly, in the war's final months, Israel's military leaders contemplated – and apparently ordered – the use of biological agents to harm or 'harass' the belligerent Arab states themselves, on their home ground. By then, of course, Israel had all but won the war and 'our-backs-to-the-wall' circumstances no longer obtained.

Neither the decision-making processes nor the mechanics of *CTB* are completely clear, given the continued classification of most of the relevant documentation in Israel's archives. But enough has been opened – we refer not to a file or files specific to the operation, but to isolated cables in dozens of files largely devoted to other matters – to enable the reconstruction that follows.[10]

The well-poisoning campaign was personally initiated in April by the Haganah's head of operations and acting chief of general staff, General Yigael Yadin,[11] undoubtedly with Ben-Gurion's authorisation (see below). At least initially, it was Yadin who, in effect, personally liaised between the 'producers' of the bacteria, HEMED (*heyl mada'*—the Science Corps), the Haganah/IDF's weapons development arm that supplied the organisation with a variety of armaments,[12] and the officer and unit charged with managing the delivery of the poison to the wells. Later, through the summer, with Yadin – now IDF chief of operations and acting IDF chief of general staff[13] – still personally involved, the campaign was managed by Israel's intelligence services. Throughout, *CTB* was highly compartmentalised and top secret – almost no one not directly involved was in the loop, and no one connected to *CTB* left accessible written records during the following years of what they had been involved in. Even in the logbook of Haganah General Staff/Operations for April-May 1948, registering most of the important incoming cables – of the many hundreds received during those weeks – there is only one explicit, but of course unexplained, use of the words 'shallah lahmekha'.[14] Indeed, all the accessible cables dealing with *CTB* between Yadin, HEMED, the campaign's hands-on director and the operational units involved are written cryptically, often leaving the historian to guess at meanings or befuddled.

As with much of Israel's behaviour in the Zionist-Arab conflict (including Israel's nuclear program, launched in the late 1950s), the bacteriological campaign of 1948 had its roots in the Second World War and the Holocaust. In summer 1945, immediately after the end of the war in Europe, Abba Kovner, a Crimean-born Jewish partisan leader and poet, after reaching Palestine tried to organise a mass poisoning of Germans to avenge the murder of the six million. He considered two alternatives: Plan A, to poison waterworks in a number of German cities; and Plan B, to poison thousands of SS officers detained in Allied prisoner of war camps. Kovner sought out and obtained a quantity of poison from the brothers Aharon (1914–72) and Ephraim (1916–2009) Katchalsky (later, Katzir), young scientists who worked in the laboratory of the organic chemistry department of the Hebrew University in Jerusalem.[15] They believed Kovner intended to carry out Plan B.[16] Kovner was arrested by British security men on his way to Europe right after he dumped the poison in the sea, and the revenge operation was aborted.

But the notion of employing poisons against 'the enemy' resurfaced as the first Arab-Israeli war loomed. At the end of 1947 or the start of 1948, Ephraim Katchalsky, then doing research at the Brooklyn Polytechnic Institute in New York, met David Rittenberg, an American biochemist at Columbia University and told him – so Katchalsky related to historian Dina Porat in a 1998 interview – 'I need germs and poisons for the [impending/ongoing Israeli] war of independence.'[17] Rittenberg told Chaim Weizmann, the Zionist elder statesman and scientist, who was in New York at the time, of this request, calling Katchalsky a 'savage' (*pere adam*).[18] An enraged Weizmann ordered that Katchalsky be dismissed from the Sieff Scientific Institute in Rehovot (soon to become the core of the Weizmann Institute of Science), stating that 'people in my Institute cannot be involved in such matters'. But a few weeks later Weizmann relented and Katchalsky's dismissal was rescinded.[19]

HEMED, officially created on 17 March 1948 with Aharon Katchalsky at its head, consisted of three sections:[20] HEMED A dealt with chemical problems, HEMED B with biological defence and warfare, HEMED C with geology and nuclear research.[21] It was Haganah officer Alexander Keynan (1921–2012), a young microbiologist at the Hebrew University, who proposed the establishment of HEMED B to Yadin, and on 18 February 1948 Yadin ordered him to set it up (even before HEMED itself had been officially established). The location of the unit's initial base is unclear but it eventually moved to Jaffa (occupied by the Haganah on 14 May) and then to Abu Kabir, a deserted Arab village southeast of Tel Aviv.[22] After the 1948 war, HEMED B – its activities 'kept top secret' – became a formally civilian but still top secret scientific installation, the Israel Institute for Biological Research located in Nes Ziona, with Keynan as its first director.[23]

It would appear that the decision in principle to launch the 1948 biological campaign was taken on 1 April, during a protracted one-on-one meeting between Ben-Gurion and General Yohanan Ratner (1891–1965). The Odessa-born Ratner was a key veteran member of the Haganah – later IDF – general staff. He had commanded a brigade in the Red Army after the October Revolution and during the Second World War had served on the staff of the British Eighth Army in Cairo. In between, he served as professor of architecture in the Haifa Technion (Israel's MIT) while clandestinely helping to organise the Haganah general staff. On 26 March 1948, four months into the 1948 War, Ben-Gurion offered Ratner the position of de facto Haganah chief of general staff. Ratner hesitated and then declined, leaving Yadin in effective control of the organisation – and, later, the IDF – for the duration of the war. Ratner instead asked to head the Haganah's Planning Department, which included control of HEMED.[24] Ben-Gurion agreed. On 1 April, at their meeting, Ben-Gurion and Ratner surveyed the functioning of the key Haganah branches and brigades and senior appointments – and also '[discussed] the development of science and speeding up its application in warfare', as Ben-Gurion put it in his diary.[25]

What happened during the following days suggests that the seed of *CTB* was planted at that meeting. On 7 April, Yadin cabled David Shaltiel, the commander of the Haganah's Etzioni Brigade and Officer in Command (OC) Jerusalem District, instructing him to meet Moshe Dayan, codenamed 'Magi',[26] who will 'reach you tomorrow in the first convoy from the Dead Sea for a special mission [*le-tafqid meyuhad*]'.[27] Between the Ben-Gurion-Ratner meeting and this cable, Yadin, probably with Ben-Gurion's and Ratner's approval or authorisation, had selected Dayan, the Haganah General Staff's Arab affairs officer as well as its 'Staff Officer for Special Operations [*qetzin mateh le-tafqidim meyuhadim*]',[28] to run the *CTB* campaign. Dayan had a reputation as an efficient clandestine operations officer. Ben-Gurion, who later appointed Dayan IDF chief of general staff (1953–58), had probably met Dayan sometime in 1944–45, when he played a part in the 'Saison', the Haganah crackdown against the right-wing Jewish terrorist/para-military organisation, the Irgun Zva'i Leumi (IZL or 'Irgun'), and occasionally met him in 1947 in his capacity as an Arab affairs expert.

It took Yadin-HEMED-Dayan two weeks to get the *CTB* campaign off the ground, against the backdrop of the hostilities that raged around the country, including Operation Nahshon. Dayan duly arrived in Jerusalem and met Shaltiel on 8 April – and then travelled down to Tel Aviv or the coastal plain, probably to meet with Yadin and collect the typhoid-dysentery bacteria (perhaps stored in test-tubes) prepared by HEMED B. During the following weeks, Dayan personally delivered the bacteria to specific Haganah officers around the country.[29] This was how, by the way, Dayan's three-year-old son, Assi, contracted typhoid. In his 2012 autobiographical film, Assi Dayan related: 'After a few weeks [of absence], he [Moshe Dayan] arrived home [in the Jezreel Valley settlement of Nahalal] for a short visit and brought with him test-tubes [*mavhenot*] containing typhus [*sic*] bacteria designed to poison the drinking water of the Arab Legion [i.e. Transjordan's army]. At home one of the test-tubes broke and it was me and not the Jordanians who was infected. My father went back to the front, and I was [sick] in bed for many days.'[30]

But Dayan was unable to return to Jerusalem as planned on 9 April due to the suspension of the scheduled convoy – since the start of the siege of Jerusalem in late March, Jews had

travelled to and from the town in Haganah-organised and -guarded convoys. The suspension was caused by the massive funeral that day of the Palestinian militia commander, Abd al-Qadir al-Husayni, who had been killed in a battle at al-Qastal on 8 April. Abd al-Qadir was buried in Jerusalem's Haram al-Sharif (the Noble Sanctuary), known to most non-Muslims as the Temple Mount. Dayan asked Yadin to arrange 'places on the airplane' to take him to Jerusalem (and to notify his parents in Nahalal that he would be 'stuck in Jerusalem').[31]

Dayan reached Jerusalem probably on 10 April. Yadin that day cabled Shaltiel to 'fill Magi's request concerning *Cast Thy Bread* [*male et baqashat magi be-ʿinyan shallah lahmekha*]'.[32] It appears that the Haganah General Staff/Yadin had decided sometime between 8 and 10 April to name the operation *Cast Thy Bread*, and this was to remain its codename until the end of the year. At their meetings on 8 or 10 April, Dayan may have asked Shaltiel for the use of one or two officers to carry out the well-poisonings, or he may have brought one or two with him, perhaps from the neighbouring Harel Brigade, to which the Arab Platoon (see below) was attached at the time. Shaltiel, who does not seem to have been very cooperative, was preoccupied at the time with Nahshon and with the Deir Yassin killings.[33]

Yosef ('Yosefle') Tabenkin, codenamed 'Amon', appears to have been more amenable. Tabenkin commanded the Harel Brigade's 4th Battalion and was responsible for the area – and the Tel Aviv-Jerusalem road – just west of Jerusalem. He apparently loaned Dayan one or two officers willing to deliver the poison to the targets. Early on 13 April Dayan cabled Yadin that the 4th Battalion 'was beginning' *CTB* operations '[while] Etzioni had not [played ball?]'.[34]

It is unclear what Dayan and/or Tabenkin managed to do during the following days, which were marked by battles and skirmishes along the Tel Aviv-Jerusalem road and the constant shift of Harel troops from place to place. On 16 April Dayan – now calling himself, in code, 'Moshe Neptune' – cabled Yadin: '*Cast Thy Bread* will be activated by Nahshon [meaning Operation Nahshon forces, which included the Harel Brigade] on Monday or Tuesday [19 or 20 April]'. He also told Yadin that he would be travelling to Tel Aviv mid-week and to notify his parents.[35] (A week later, HEMED asked Dayan to send a report about the progress made in the campaign and where *CTB* had been implemented.)[36]

On 22 April Dayan cabled that he was 'ready to travel with all the material [*kol ha-homer*]' and 'will bring with me Yaacov [?] and an [the?] engineer [*mehandes*]'. Dayan instructed: 'Prepare a place for the material and the work.'[37] The following day, 23 April, Dayan, now back in Jerusalem, informed Keynan that 'we have begun to activate *Cast Thy Bread* as planned'.[38] Later that day he cabled Keynan that *CTB* had been implemented in Biddu and Bayt Surik,[39] two Arab villages northwest of Jerusalem, captured, temporarily denuded of their inhabitants and partially levelled on the night of 19/20 April, and then abandoned by the Palmah.

The last days of April witnessed a doctrinal addition to the aims of *Cast Thy Bread:* the hindering of the prospective invasion of Palestine by the armies of the neighbouring states. The Arab states had made it clear, through radio broadcasts and other channels, that they intended to invade Palestine when the British left. It was believed that the Syrian army (and possibly also the Lebanese and Iraqi armies) would advance on Eastern Galilee (as, in fact, the Syrians and Iraqis did on 15 May). On 22 April the Haganah commander in northeastern Galilee, Uri Yoffe (codenamed 'Oded'), headquartered at Yavniel, cabled Yadin that the 'Cast Thy Bread [material? word unclear] had arrived'. But 'according to my investigation', wrote Yoffe, 'we have no place/location where we can use it. I understand that the matter [i.e. material] can spoil [*ha-ʿinyan yakhol le-hitqalqel*]' and so thought it desirable 'to take it immediately to some other place [*leqahto miyad le-maqom aher*]'.[40] Whether Yoffe really had nowhere to usefully plant the material or whether he was averse to using it for other reasons is unclear. In any case, we do not have Yadin's response.

But the chain of events relating to *CTB* and the prospective invasion of Palestine in another area, fifty miles to the south, is clearer. On 27 April the Etzioni Brigade passed on to Yadin a piece of intelligence culled from 'consular circles': 'The Transjordan parliament decided last

night on intervention in Palestine's affairs and endorsed a mobilisation of its army. Such [intervention] is a matter of hours.'[41] This cable was followed, within hours, by a more specific warning: 'Highly reliable intelligence tells of serious preparations by the Transjordan and Iraqi armies including air power to invade the country. The direction of [the proposed] advance is apparently Jerusalem. Stopping Arab traffic is necessary. The demolition of the Allenby and Jericho bridges is desirable. The only possible alternative is the destruction of the Jericho-Jerusalem road.'[42] As we know, the Transjordanian and Iraqi armies only invaded Palestine on 15 May, alongside the Egyptian and Syrian armies, because they were unwilling to move before the prospective British departure, scheduled for that day. (In fact, the British quit Palestine a day early, on 14 May.) But Etzioni intelligence at the end of April apparently believed that there was a likelihood of invasion momentarily.

Yadin weighed Etzioni's warning and ordered: 'Activate *Cast Thy Bread* in Jericho. It is very important.'[43] Shaltiel (Etzioni) then apparently consulted Dayan, who informed Yadin: '*Cast Thy Bread* will be activated as soon as possible [*be-heqdem*] in Jericho and in Jerusalem's environs.'[44] But Jerusalem's environs (*bi-svivot Yerushalayim*) presented a problem: Harel Brigade, responsible for the area just west of the city, on 6 May informed Etzioni that they were 'leaving your area' and that Etzioni would henceforth be responsible for 'activating … *Shallah* [cast, meaning *CTB*] in your area' and 'henceforward we do not have the ability to deal with the matter [in your area]'.[45]

But another problem obtruded: Dayan was not around – perhaps he was in the north or the Negev – or there were no materials available to carry out the operation in Jericho. 'There is no *Cast Thy Bread*,' Yadin informed Etzioni on 7 May. 'He [Dayan] will not be able to fly tomorrow to the [Dead] Sea for lack of a plane. Better that he come down [westward] to Tel Aviv in a convoy and from [Tel Aviv] we will move him there [i.e. eastward, to the Dead Sea, by air] more easily.'[46] Given Dayan's apparent unavailability, Etzioni cabled Yadin: 'In line with your order, I will tomorrow send a SHAI [Haganah Intelligence Service] man with the material to carry out the *Cast Thy Bread* operation at the Dead Sea [i.e. Jericho area].'[47]

But transportation remained a problem. The following day Yadin informed Etzioni 'concerning *Cast Thy Bread* at the Dead Sea'. 'There is no plane today to Jerusalem because of the weather. If the weather allows, we will send a plane tomorrow to take him [i.e. the SHAI operative].'[48] But problems continued to plague the operation. Indeed, nothing seems to have been done in the Jericho area before the Arab Legion actually crossed the Jordan River into Palestine just east of the town at dawn on 15 May – and it is unclear what exactly was done thereafter. Around 15 May, the Haganah was engaged up to its neck, on all fronts, containing the various invading Arab armies; *CTB* was far from a priority (except, perhaps, in Ben-Gurion's mind; see below). On 19 May 'Moshe Mizrahi' – possibly Dayan's successor as manager of *CTB*, at least in the Jerusalem area, but still using Dayan's codename – complained that the 'material' (i.e. bacteria) for Jericho was stuck at the airfield 'here' (Jerusalem?) 'for lack of aircraft. Try to carry it out without the files',[49] he wrote. He was referring to the SHAI files on Jericho and Wadi Qelt, west of Jericho. Jericho received much of its water from the Wadi Qelt springs. Dayan had sent Yadin copies of the files – for use by the operative intending to poison the Jericho-Wadi Qelt waterworks – a few days before, but these appear to have been mislaid. On 18 May Mizrahi informed Yadin/Neptune that a second copy of the files had been sent to him four days before[50] – and Neptune now acknowledged that they had arrived.[51] But, in the end, it is unclear whether the *Cast Thy Bread* operatives managed to poison the Jericho area/Wadi Qelt wells or springs. In any event, the Jericho area – a logistical hub of the Arab Legion expeditionary force in Palestine – was still in Neptune's sights in July. According to General Staff/Operations cable traffic, a *CTB* officer was sent to the area early that month, and the OC 'Sodom Area' – south of Jericho – was ordered to 'give him all [the] assistance he demands', presumably relating to an unfolding well-poisoning operation in the Jericho area.[52]

Back in May, two other operations proceeded more smoothly. On 13 May Dayan informed Yadin/Neptune that *CTB* had been implemented in Bayt Mahsir, an Arab village south of the Jerusalem-Tel Aviv road captured two days earlier.[53] The initial operational order had called for 'the destruction of its ability to constitute an economic and military base for enemy forces surrounding the road'.[54] And on 15 May, the day of the pan-Arab invasion, Dayan informed Yadin that *CTB* would be carried out against '*Shelomo ha-Melekh*' (King Solomon) that night.[55] The following day, Dayan informed Yadin that *CTB* had been carried out 'successfully in the *Shelomo ha-Melekh* area'.[56] It is uncertain what the codename '*King Solomon*' referred to – though it may have been to the Siloam (Shiloah) spring and pool or to the neighbouring Gihon Spring, southeast and east of the Old City walls, where, according to the Bible, Solomon – Shelomo – had been crowned. In any case, 'Mizrahi' informed Yadin on 26 May that 'the *Shelomo ha-Melekh* Operation has been carried out for the second time'.[57]

But the shift in policy, from using *Cast Thy Bread* to block a return of Palestinian militiamen to their villages to using it to undermine Palestinian staying power in still inhabited sites and to sow hindrances along the prospective routes of advance of invading Arab armies, had already begun a few weeks before. Haganah intelligence assessed that the invading Arab armies would include a lunge from the north, by the Lebanese Army (perhaps accompanied by part of the Syrian Army), down the coastal road from Ras al-Naqura through Acre toward Haifa. Yaacov Pundaq, a Haganah company commander in the 21st Battalion, Carmeli Brigade, responsible for the Western Galilee town of Nahariya and surrounding kibbutzim – an area designated in the UN partition resolution of November 1947 to form part of the Arab state – had previously repeatedly damaged the Kabri aqueduct that fed the Arab town of Acre. But the Arabs had repeatedly repaired it.[58] He now poured flasks full of typhoid (or typhoid and dysentery) bacteria into the aqueduct, near the Arab village of al-Kabri. According to his later testimony, the flasks, with instructions, had been handed to him by Moshe Dayan.[59] This turned out to be the most serious and potent use of *CTB* during the 1948 War.

The morale of the inhabitants of Acre was already shaky due to the Haganah's conquest of the Arab parts of nearby Haifa, the region's 'capital', on 21–22 April and the flight of the bulk of its population, mostly to Acre or through Acre to Lebanon, and of the Haganah's severance of the coast road linking Acre to Haifa in the south and Lebanon in the north. The prospective departure of the British, who had previously protected Acre from Haganah attack, contributed to the town's plummeting morale.[60] And so did the outbreak of what most contemporary reports called a 'typhus' epidemic. According to a report by the director of Acre's Ittihad Hospital from July, the epidemic broke out already in the 'middle of April',[61] though most reports about the outbreak focus on the first week of May.

Acre's Arabs appear to have been unaware of the origin of the epidemic. On 3 May, Acre's mayor reported that 'the town of Acre is now in a state of extreme distress', partly because the Jews had cut off the town's electricity supply, thus shutting down the pumps drawing water from the town's wells, and had damaged the aqueduct from Kabri. 'The lack of water had prevented us from carrying out a cleaning operation and other [sanitation] measures required in this situation, and as a result of all this typhus illness had appeared among us in a dreadful way.'[62] But Brigadier Arthur Joseph Beveridge, director of the British Army health services in Palestine, stated on 6 May at a conference in Acre that the 'medical representatives … consider the infection is water bourne [*sic*]'.[63]

Many of those who fell ill were from among the refugees, mostly from Haifa, encamped in various parts of Acre. On 8 May, a representative of the International Committee of the Red Cross sent to the town, Maximilien de Meuron, reported that there had been some ninety cases among the locals and sixty-five among the British forces stationed in the region.[64] Later, after the IDF conquest of the town on 17–18 May, the director of the Ittihad Hospital reported that the hospital had taken in 58 cases of 'typhoid' and '12' of dysentery between 25 May and 18 July and that five of the typhoid cases had 'succumbed'.[65]

But, before the IDF conquest of the town, the Usama b. Zayd Scouts Company of Acre reported on 9 May to the commander of the town's Arab Liberation Army (ALA) garrison that 'the rumours about the spread of an epidemic in the town are greatly exaggerated, and there is now a widespread vaccination campaign, and the water has been purified after the necessary materials [chlorine?] had [become available]'.[66] The Scouts' appreciation of the situation was more or less echoed in the Haganah Intelligence Service's assessment from the same day: 'The number of people infected with typhus in Acre is diminishing daily.' The report stated that an International Red Cross mission had arrived in the town and was treating the sick, as was a delegation of '12 doctors and 12 nurses' who had arrived from Syria. The report stated that altogether some '70' had been reported sick, but assumed that the true number was much greater, 'as many cases had gone unreported'.[67]

Nonetheless, in retrospect, Israeli officers and officials attributed the ease with which Acre fell to the Haganah in part to the demoralisation caused by the epidemic. The SHAI, in its report from the end of June 1948 on the causes of the Arab flight from Palestine, mentioned 'the typhus epidemic' as 'an exacerbating factor in the evacuation' in certain areas. 'More than the disease itself, it was the panic induced by the rumours of the spread of the disease in the area that was a factor in the evacuation', stated the report. In its site-by-site breakdown of the Arab flight, the report mentioned 'harassment [by the Haganah] and the typhus epidemic' as the causes of the partial exodus of the population from Acre on 6 May.[68] In his memoir, *Maʿarkhot Tzafon* (Campaigns of the North), published in 1949, Moshe Carmel, the Carmeli Brigade's commanding officer, wrote of the conditions in the town before it fell to Haganah assault: 'Water was in short supply. In the town unemployment, fear, dirt and hunger prevailed. Because of the poor sanitary conditions serious illnesses and epidemics broke out.'[69] The official history of the Carmeli Brigade, published two and a half decades later, was marginally more informative: 'At the start of May a typhus [epidemic] broke out [in the town],' causing demoralisation.[70]

On 7 May the Carmeli Brigade intelligence officer wrote: 'The typhus epidemic is spreading and increasing the [townspeople's] panic.'[71] The brigade's medical officer on 6 May ordered the brigade HQ personnel to be vaccinated against typhus[72] and, the same day, ordered the inoculation of all the brigade's troops by 15 May.[73] Immediately after the town's fall, the new military governor was instructed to send uninoculated troops for inoculation.[74] Further bouts of troop inoculation took place weeks after the capture of Acre.[75] In June, Haifa's Department of Health informed the Carmeli Brigade's medical officer that Acre's water supply was 'polluted (*ha-mayim mezohamim*)' and 'unsuitable for drinking without boiling or prior chlorination'.[76]

At some point, the rumour that the water was deliberately contaminated spread among the Arabs. ʿArif al-ʿArif, the Palestinian administrator and historian, wrote in the mid-1950s that the Jews polluted the water coming from Kabri with typhoid germs; an unnamed 'trustworthy friend' told him that forty people who drank the poisoned water died within two days, he wrote.[77]

Back to mid-May. The Arab Legion's advance across the Jordan River and through Jericho into the West Bank, and then to East Jerusalem, during 15–18 May, threatened a number of isolated Jewish settlements just north of the city (Neve Yaacov, ʿAtarot). The Yishuv leadership, while always reluctant to abandon settlements, considered their evacuation. (They were, in fact, abandoned within days.) A question arose: if they were evacuated, should their waterworks first be poisoned, to deny their use to the invaders?[78] Regarding the settlement of Har-Tuv, west of Jerusalem, Etzioni told Haganah General Staff that it was outside their area of control; in terms of *CTB*, it was up to the Givati Brigade, Etzioni wrote, to take responsibility for the site.[79] Mizrahi then asked, in principle: 'Is there authorisation to use B [the Hebrew letter Bet – B for biological weapons?] in the areas that will be evacuated by us [i.e. Israel]?'[80] Days passed and no answer was forthcoming. On 19 May Mizrahi again asked for a ruling in principle: 'Awaiting your answer regarding the use of material B in the places that are being abandoned.'[81]

A major shift in modus operandi and personnel occurred after the return of Ephraim Katchalsky from New York, via Europe, to Palestine.[82] On 13 May Ben-Gurion jotted down in his diary: 'Ephraim has come', and then went on to list the scientist's expenditure on chemicals and sniper-scopes (due to arrive by boat), four radar systems (still in the United States), and 'biological materials' that Katchalsky bought for $2,000 and most probably carried with him. Ben-Gurion decided that Ephraim should stay in the country and replace his brother Aharon as overall commander of HEMED.[83] Evidently Ephraim's efforts to obtain 'germs and poisons', or at least equipment to facilitate their weaponization, met with success, and we may assume that the 'biological materials' he acquired boosted the capabilities of HEMED B. (It is significant that the editors of the printed version of Ben Gurion's war diary – Gershon Rivlin and Elhanan Oren – chose to delete the words 'Biological materials $2000' from the entry for that day.)[84]

Ephraim arrived in Palestine at a perilous juncture. Ben-Gurion's next diary entry that day mentions the Arab conquest of Kibbutz Kfar Etzion and the subsequent decision to allow the three other settlements of the Etzion Bloc, deep in the Arab-populated hill-country between Bethlehem and Hebron, to surrender. The fall of the bloc was a major, unprecedented setback – these were the first Jewish settlements to fall to Arab attack during the war – that sent shock waves through the Yishuv and heightened fears that it might not be able to repel the prospective invasion by the regular Arab states' armies. (The bloc fell, in effect, to assault by Arab Legion companies in what was the Haganah's first battle against regular Arab troops. These companies, used by the British army in Palestine as auxiliaries, had been left behind in the country when most of the Legionnaires had been withdrawn to Transjordan on the eve of the British departure.) It stands to reason that it was Katchalsky's arrival, coupled with the fall of the Etzion Bloc, that prompted Ben-Gurion to set in motion, the following day, the restructuring of the biological warfare campaign geared to obstructing the invaders' expected advance on Haifa and Tel Aviv.

14 May may have been the busiest day in Ben-Gurion's life; it was certainly the most momentous. That morning he had had to deal with the fallout from the loss of the Etzion Bloc; then he had had to formulate the declaration of the establishment (or declaration of independence) of the State of Israel, which he read out in a formal ceremony in Tel Aviv that afternoon, and set in motion the establishment of the new state's government departments; and, as defence minister, he had to oversee the last-minute preparations for the expected invasion of the country by the armies of the surrounding Arab states the following day. Yet, he also found time to write and send a personal letter to General Ratner concerning *CTB*, although the letter does not mention the operation explicitly. It stated: 'All the science units [i.e. all branches of HEMED], the company of science workers, [and] the *mistaʿarvim* [literally those who pose as Arabs, meaning the Arab Platoon of the Palmah] – are [now] under your command, and you are responsible directly to me. Ezra [Helmer, later Omer, head of the Haganah General Staff Intelligence Department] will be your operations officer. You are authorised to appoint a special officer responsible to you directly to any unit working in these areas [presumably HEMED units or, specifically, units involved in *CTB*] and to any type of operation [within HEMED's purview].'[85]

The letter – and the contemplated expansion of *CTB* that the letter seemed to portend – reveals the depth of Ben-Gurion's involvement in the operation. But it also highlights his acute, indeed existential, fears as the Yishuv faced the pan-Arab invasion which unfolded the next day. No one could predict how effectively (or ineffectively) the Arab armies would perform, and the Haganah top brass knew that the Yishuv was outgunned and (theoretically) outnumbered, and faced the prospect of a simultaneous onslaught along all its borders.[86] Ben-Gurion may have been confident that the Yishuv would ultimately triumph – or at least he felt compelled to put a brave face on things. But he could not ignore what Yadin had told him and his assembled ministerial colleagues just two days before, on 12 May: that the Yishuv's chances were 'fifty-fifty' or 'very evenly balanced',[87] meaning that the Zionist enterprise might well go under.

Ben-Gurion throughout his life had exhibited a profound reverence for 'science', much like some other politicians who knew little about the subject. Indeed, as Ratner wrote in his autobiography, 'one could almost say that he had a mystical belief in the power of science and its vocation to solve seemingly unsolvable problems.'[88] As the war entered its crucial phase, Ben-Gurion appears to have believed that 'science' would give the Jews the necessary edge. Earlier, in a meeting with scientists during the war's first weeks, Ben-Gurion had told the gathering – which had included Ernst David Bergmann, Aharon Katchalsky, Yohanan Ratner and Shelomo Gur – that back in October 1943, when Ivan Maisky, the Soviet ambassador to London, had visited Palestine, the Russian had told him that the Jews would establish their state and win the prospective war with the Arabs by virtue of 'the wonderful youth that had grown up in Palestine' and the Yishuv's Jewish scientists, 'who could work wonders'.[89] It is not unreasonable to think that, facing what Palestine's Jews feared was possible catastrophe and a second Holocaust, Ben-Gurion in April-May 1948 saw in *CTB* a magic bullet.

There was nothing new in the Ben-Gurion letter's iteration of Ratner's overall responsibility for HEMED. What was new was the explicit assignment of the Arab Platoon to serve at Ratner's discretion in HEMED's operations – meaning, in *CTB*. (Ratner had no other conceivable use for the *mistaʿarvim*.) The Palmah's Arab Platoon,[90] established in 1943, was a small, secret unit composed mainly of dark-skinned native Arabic-speaking Sephardi Jews who could pass for Arabs. The unit was codenamed *ha-Shahar*, which meant 'the dawn'. Following the war's outbreak in November 1947, its members had been sent, usually in pairs, into Arab urban neighbourhoods and rural areas to gather intelligence and, occasionally, to carry out acts of sabotage and assassination.

Henceforward, under the direction of Ratner/Omer, *CTB* would be carried out, in the field, by operatives whose daily bread was penetrating Arab-populated areas. Until this point, the Arab Platoon operatives, the *mistaʿarvim,* had been under the command of the Palmah, in coordination with the SHAI. Now they would be at the beck and call of Ratner to serve *CTB* – while, if free, continuing to carry out missions for the SHAI and Palmah. It is worth noting that Ben-Gurion's letter nowhere explicitly mentions *CTB* or well-poisoning; as was Ben-Gurion's wont, he always refrained from explicitly associating himself in writing with anything that might be construed by later generations as morally dubious or repugnant.[91]

Dayan was not cast in any role in the newly envisaged organisational setup. With the pan-Arab invasion looming or already in motion, Dayan, in fact, was itching for a conventional combat posting and began to press Yadin. On 17 May he got his wish – an appointment as OC of a 'commando' battalion, which he was tasked to set up from scratch.[92] But before he could take up the appointment, a crisis developed in the Jordan Valley, just south of the Sea of Galilee. Having crossed the international frontier on 15 May, the Syrian army was advancing toward the Yishuv's first kibbutz, Kibbutz Degania Aleph – where, incidentally, Dayan had been born 33 years earlier (he was the second child of the first kibbutz). Yadin delayed the activation of the battalion command appointment and, with Ben-Gurion's approval, on 18 May sent Dayan to oversee the battle in the Jordan Valley.[93] Dayan was to remain there until 22 May, by which time the battle was over, and returned to Tel Aviv that night or the following day.[94]

CTB was now under Ratner's overall command, with Ezra Omer (Helmer) or another officer designated by Ratner, actually running the show on the ground. Previously, Dayan, while physically much of the time in Jerusalem and focused on Jerusalem and its environs, had overseen, even micro-managed – as we know from the Acre episode – *CTB* around the country. The Tel Aviv-based Omer apparently now appointed another officer – we do not know his name, though it may have been Moshe Ben-Zvi, of the Arab Platoon – to run the operation in the Jerusalem area. This officer would continue, in late May, June and July, to code-sign his cables 'Mizrahi' (but no longer 'Moshe Mizrahi'), and occasionally he would sign the cables 'Yisrael Mizrahi', and, in August, 'Mizrahi Boni'. In a series of cables over June-August between 'Mizrahi' and 'Neptune' (Hemed B), the two parties discussed the transfer of personnel and containers between the Tel

Aviv area and Jerusalem.[95] Mizrahi was nonplussed that the operation was not proceeding smoothly. Annoyed, he reprimanded Neptune: 'Immediately stop your neglect of Jerusalem and take care to send bread here [*daʾagu lishloʾah lehem kan*].'[96]

The first concrete evidence we have of the *mistaʿarvim*'s involvement in *CTB* came from the cable that Egypt's Minister of Foreign Affairs sent to the Secretary General of the United Nations on 27 May 1948. The minister announced that a day earlier the Egyptians had arrested two 'Zionist agents who admitted that they had been instructed by the Commander of the Jewish colony of Dorot to contaminate the springs from which the Egyptian troops at Gaza draw their water supply, and that they had actually dropped typhoid and dysentery germs into the wells lying to the east of that town'. The minister pointed out that this act violated the Geneva Protocol of 1925. Two days later, a communiqué issued by the Egyptian Ministry of Defence specified that the two operatives were in the possession of 'several bottles containing a liquid which was discovered to contain the germs of dysentery and typhoid', as well as a 'canteen containing a liquid with a high concentration of typhoid and dysentery germs'. The Egyptian army took the precaution to supply its soldiers with water brought from al-ʿArish and Rafah, but subsequent tests revealed that Gaza's water was drinkable, with the exception of the two wells at which the 'Zionist spies were found loitering'; these were immediately closed.[97] On 27 May Ben-Gurion recorded in his diary, without comment or elaboration: 'Yigael [Yadin said]: We have intercepted a cable from Gaza saying that they have captured two Jews with malaria bacteria, and gave orders [to their troops] not to drink the [local] water.'[98] The two – David Mizrahi (calling himself Mustafa Salah Khadir) and Ezra Horin (Afgin) (calling himself ʿIzzat Ibrahim Nimr) – had been driven to the area by Arab Platoon officer Moshe Ben-Zvi and crossed from Kibbutz Gevarʿam into Gaza in the early hours of 21 May. They were apprehended by locals or Egyptian soldiers that day or the next (and not on 26 May, as stated by the Egyptian Foreign Minister). On 22 May Horin signed a confession in Arabic, rendered in Hebrew letters. The two were interrogated and tortured, and in August were tried in an Egyptian military court and executed in Gaza by firing squad on 22 or 27 August 1948.[99] Whether Israel made clandestine attempts to save them is unknown.[100] What is clear is that the Egyptians took the matter seriously. At the end of May their medical officers began to analyse the water in the wells in their zone of occupation.[101]

The Gaza well-poisoning mission unfolded as the Egyptian expeditionary force was advancing – the Israelis felt, relentlessly – toward Tel Aviv. On 19 May, Egyptian battalions launched their assault on Kibbutz Yad Mordechai (named after the commander of the Second World War Jewish uprising in the Warsaw Ghetto), and, after a bloody battle, the kibbutz fell on 23 May. After Yad Mordechai, there appeared that little could impede the Egyptian drive northward.[102]

Yeruham Cohen, the intelligence officer of IDF Southern Front in late 1948, in his war memoir wrote that Horin and Mizrahi were sent to the Gaza 'to gather intelligence on the invading Egyptian army'.[103] In his history of the Arab Platoon, Gamliel Cohen elaborated on the two *mistaʿarvim's* mission and said the same thing: the two were sent into Gaza to gather intelligence. But he added: '…among our military leaders there were those who tried to "hitch a ride" on the intelligence mission and raised the idea… of poisoning the well from which the Egyptian soldiers in the Gaza Strip drank.' According to Gamliel Cohen, once the order from the General Staff/Operations Branch went down the chain of command through 'the Intelligence Department' – headed by Omer – and reached Shemarya Guttman, the just-installed commander of the Arab Platoon, Guttman 'asked to speak to General Yohanan Ratner… and protested … saying the idea was immoral and asked that the order be rescinded'. Guttman, according to Cohen, was adamant and threatened to resign. So 'the idea of poisoning wells, which had been added to the intelligence assignment, was dropped and the mission assigned to the two was solely one of intelligence', Cohen concluded.[104]

But according to Guttman – and Gamliel Cohen saw the interview Yeruham Cohen had conducted with Guttman in 1988 (it is referred to in Gamliel Cohen's footnotes in *Ha-mistaʿarvim*)

– the mission was, indeed, to poison wells. In that interview, conducted years before the publication of Gamliel Cohen's book, Guttman told Yeruham Cohen that he had been summoned by Ratner and Ratner had told him:

> we have decided to send two people to the Egyptian border to do this job [concerning] wells. I [Guttman] said to him, 'Listen Ratner, firstly I personally object to this vehemently… I ask that they cancel this…' I ask him, 'Assuming that I announce that I will resign, will this lead to cancelling this thing?' And he says to me, 'Firstly, you will not announce this. And secondly it will not influence [the decision to go ahead]. There is a decision, and it has to be carried out.' I told him, 'I want you to know that this is against my professional conception of what has to be done, and also against my conscience' […] I tried in all ways to prevent [its implementation]. I also told Ratner, 'Look, we may also conquer this area tomorrow and drink from this water, and all our army will also be sick with typhus or dysentery'… But they insisted. I admit that had this matter surfaced after I had been in the unit longer and had I been braver with regard to what I could have demanded and not demanded and not carried out, as we [later] refused to carry out some things, then they would not have sent these guys [to Gaza].

In the interview, Guttman claimed that the idea of poisoning the wells in Gaza had come from 'the Arab department [i.e. section] of the [Foreign Ministry's] Political Department' [the predecessor of the Mossad]. Yet he asserted that the go-ahead had been Ratner's decision. Guttman added: 'I said to Ratner… "Are you willing to give me [this] in writing, that we need to give you the men [for the well-poisoning mission]?" And he said to me, "I will never give such a thing [in writing]."' Guttman also asked Ratner, on a technical level, what sort of material were they talking about – 'liquid or powder[?] …and he then decided it would be powder'. In the interview, Yeruham Cohen asked Guttman: 'But it was in a canteen(?).' Guttman, 'Yes, a canteen. And they [the two operatives] were supposed to take out [the powder?] and put water into it [i.e. mix water with the powder in the canteen?].' Elsewhere in the interview Guttman remarked, 'The two were caught red-handed (*tafsu otam ʿal ham*).'[105]

On 27 May, at the meeting of the UN Security Council in Lake Success, New York, Faris al-Khuri, the veteran statesman who represented Syria – then a non-permanent member of the Council – asked to read into the proceedings what he said was the text of a cable he had received from Egyptian Prime Minister Nuqrashi Pasha stating: 'Two Zionists were arrested in the vicinity of the Egyptian Army encampment at Gaza. On being interrogated they stated that they have received orders from Mosche, officer commanding Dorot settlement [i.e. Kibbutz Dorot], to throw typhoid and dysentery microbes into drinking water used by Egyptian troops. They made a written statement to this effect. They stated that they threw the microbes into the well north of Gaza. The water flask used for the purpose was found on one of the men arrested, while the other confessed he threw a bottle full of these microbes into the water.'

Major Aubrey (Abba) Eban, the Israeli representative, designated in the UN protocol the representative of the Jewish Agency for Palestine, as Israel had not yet been internationally recognised and was not a member state, responded: 'The Egyptian Government and the Syrian Government have now chosen to associate themselves with the most depraved tradition of medieval anti-Semitic incitement [i.e. the charge that Jews had poisoned Christian wells]. The Security Council, we are convinced, will not wish to become a tribunal for recitations from the Protocols of the Elders of Zion offered from the words of Dr. Goebbels. We hope that the Security Council will be interested not in this contemptible incitement, but in the reality of [Arab] bombs and shells falling on Jerusalem and Tel Aviv at this moment.'[106] It is highly unlikely that Eban knew that the IDF was conducting a well-poisoning campaign.

The Egyptian accusation and Eban's retort made the pages of leading daily newspapers.[107] It stands to reason that Chaim Weizmann, then on his way from New York to France and Switzerland, read about the attempted well-poisoning, linked it to Ephraim Katchalsky's attempt to acquire 'germs and poisons', and was alarmed. If so, here may be a clue to Weizmann's deep dissatisfaction with what was going on at 'his' Sieff Institute in Rehovot during the 1948 War and the deep rift that developed between him and Ernst David Bergmann, his erstwhile protégé who directed the institute.

No satisfactory explanation has yet been offered for Weizmann's intense displeasure with his scientific colleagues in Israel at this time. In a letter to his trusted aide Meyer Weisgal, he decried the conversion of the institute under Bergmann from peacetime research to a 'war footing', from 'scientific work' to 'something which is not science but [the] making of explosives'.[108] Yet Weizmann was no pacifist. During the First World War he famously invented a new way of producing acetone and then organised its mass production, greatly helping Britain's munitions industry. So the production of explosives and other conventional war-related materials at the Sieff Institute is unlikely to have alarmed Weizmann – but weaponising bacteria was something else. Yet, he would have avoided referring to this explicitly in a letter. Weizmann's unhappiness with what had happened was probably reflected in his call to Bergmann, at the ceremony inaugurating the Weizmann Institute of Science on 2 November 1949, to 'keep Science pure and untarnished'.[109]

By contrast, Ben-Gurion's attitude remained steadfastly militant. He continued to take a great interest in *CTB* and remained intensely involved in the operation's mechanics. Indeed, during the war's UN-imposed first truce, which began on 11 June 1948, Keynan informed Ephraim Katchalsky, the new overall head of HEMED, that 'Teddy' – Teddy Kollek, Ben-Gurion's protégé, then stationed in the United States and in charge of weapons-purchasing for the Haganah/IDF – 'suggests sending two experts [in biological warfare] from America. BG wants to know what you think. Respond immediately.' Katchalsky responded: 'Tell BG that I support bringing the experts. Give details about when the experts intend to arrive and their plans.'[110] We do not know whether 'the experts' actually reached Israel and, if so, how exactly they assisted HEMED B. But from the correspondence, it is clear that Ben-Gurion was in direct contact with the 27-year-old budding scientist Keynan (at this point he had an MA in microbiology), who headed HEMED B and was one of the chief protagonists in *CTB,* probably HEMED B's main activity.

Also during the first truce, on 11 June, Yadin instructed senior IDF commanders: 'There is an immediate need to appoint in your HQ a special officer for *Cast Thy Bread* matters. The matter is of utmost importance and must be kept in great secrecy by you. Moshe Sh[alovsky] will come to you with a special letter from me in order to determine who that man [officer] will be and other relevant arrangements. You must handle the matter of selecting the appropriate officers personally.'[111] This directive was probably part of the restructuring of *CTB* operations in the wake of the Gaza fiasco.

In the south, the Negev – which at the time was conceived as stretching as far north as the kibbutzim Dorot and Ruhama in the west and Faluja and ʿIraq al-Manshiyya (today's Kiryat Gat) in the east – *CTB* operations, as far as can be ascertained from accessible documentation, began in the second half of May 1948. There is an enigmatic reference to 'Triangle and Negev material that I sent you' in a cable from Moshe Mizrahi on 19 May.[112] On 27 May, 12 days after the Egyptian Army's invasion of the south, the Palmah Negev Brigade explicitly referred to a *CTB* operation by one of its units.[113]

Hostilities in the Negev, at the time considered a remote area of the country populated by wandering Bedouin tribes and a scattering of isolated Jewish settlements mostly established in 1946, began already in December 1947 and continuously focused on water resources. The Yishuv had run a pipeline, with two branches, from the arable centre of the country down to the isolated settlements. These pipes were continuously sabotaged by hostile Bedouin, Egyptian Muslim Brotherhood volunteer units who infiltrated the country to help their Palestinian brothers, and, eventually, Egyptian Army units. As Nahum Sarig, OC Negev Brigade, put it in an overview written in July 1948 of what had happened in the previous half-year,

> immediately with the start of the disturbances there was a general unruliness [*hitparʿut*] of the [Arab] villagers and Bedouin areas in the Negev. This unruliness was expressed in attacks against the patrols that protected the water pipeline, attacks on traffic along all the roads, sabotage and dismantling of water lines and attempted attacks on settlements… [This] put paid to any possibility of protecting the integrity of the water pipelines… With the failure of the attacks on the settlements, enemy activity was limited to hitting road traffic and the water lines. The increasing pace of sabotage attacks and the need to protect

> the water lines preoccupied all our forces, [leaving us] unable to mount even minimal operations to clear the area [of the hostiles].[114]

As the attacks surged, the Negev Brigade was reinforced, and occasionally retaliated against the Bedouin tribes believed to be responsible; occasionally, their wells were demolished. This localised tit-for-tat character of the fighting continued after the Egyptian invasion of 15 May, whose main thrust was up the coastal road through Gaza and Yad Mordechai and Isdud (near present-day Ashdod), with auxiliary sorties into the area east of the Gaza Strip. A parallel, secondary thrust took Egyptian forces eastward to Beersheba, and then northeastward to Dhahiriyya and Hebron. This eastward manoeuvre brought the Egyptian forces into the Negev Bedouin heartland. Throughout 15 May-July, the northern Negev fighting was characterised by attacks on water resources, seen by both sides as a key to success. One Negev Brigade report states that 'the water problem preoccupies the enemy. At issue are water pipes and fuel for purifying [?] the water situation. It appears that there is [for the Egyptian Army?] enough useable water [for washing?] but not for drinking.' The Negev Brigade reported that on 28 May a mechanised column of Egyptian troops had occupied the Saʿad-Nirʾam crossroads, east of the Gaza Strip, and 'sabotaged in four places the water pipeline that leads to [Kibbutz] Saʿad'.[115] Three days later, units of the 2nd Battalion, Negev Brigade, blew up a water pumping station in an orange grove near the Arab village of Bayt Hanun, near Gaza.[116] On 16 June the Negev Brigade reported that the Yishuv's western water pipeline had been sabotaged in three places, near the kibbutzim Beʾeri and Beʾerot Yitzhak. The local Arabs 'were warned'. But a new hole in the pipeline was soon discovered 'and in the afternoon the Arabs were expelled eastwards …and [our troops] burned haystacks'.[117] On 3 July, the Negev Brigade reported that the water pipeline between Beʾeri and Beʾerot Yitzhak 'was yesterday blown up in 20 places'.[118] On 14 July the Negev Brigade reported that the village of Sumsum was 'cleansed [*tohara*]' by its units. 'The wells were sabotaged, and anti-vehicle and anti-personnel mines were laid.'[119]

CTB quite naturally played into this situation. On 17 May the Negev Brigade reported: 'A *Cast Thy Bread* operation was carried out south of Halsa [Halutza]'.[120] On 9 June the brigade reported that its 8th Battalion had carried out 'a *Cast thy Bread* operation in the Beersheba area'.[121] Two days later, Sarig reported that *Cast Thy Bread* 'operations' had successfully been carried out in the Beersheba area.[122] In July Negev Brigade HQ ordered the 8th Battalion to carry out a series of harassing operations against the Egyptian Army along the Rafah-Beersheba axis. Among the objectives to be targeted were 'water resources', and the brigade HQ explicitly stipulated the implementation of '*Cast Thy Bread* operations [*peʿulot Shallah Lahmekha*]'.[123]

It is apparently to these specific operations that Aryeh Aharoni obliquely referred in his autobiography, *Mi-yomano shel muʿamad li-vegida* (From the diary of a candidate for treason), published in 2000. Aharoni, a left-winger who matured into a poet and translator, in 1948 was a Palmahnik and the 8th Battalion's education/cultural affairs officer (formally titled *qetzin hasbara*). In his memoir he related that 'one morning a cute lass, a messenger from HEMED… showed up at the 8th Battalion HQ… in [Kibbutz] Tseʾelim. She accompanied a shipment of crates [*argazim*] that contained brown bottles… Hearing her explanation, I was shocked. She said that we were charged with [carrying out] an operation called "*Shallah*" (from "*Shallah Lahmekha ʿal pney ha-mayim*"). The bottles contained a culture of typhus bacteria, and the battalion's soldiers were to pour their content into the water sources [i.e. wells] serving the Egyptian Army.' Aharoni relates that he went to his battalion OC, Haim Bar-Lev,[124] 'and I told him categorically, that if he carried out this dastardly deed, I would request a transfer out of the battalion. Haim smiled at me and asked, "What do you suggest we do with [these bottles]?" "Destroy them" I said. "Destroy them" he responded.' Aharoni writes that he then threw the bottles into a nearby barrel and torched them. But he added: 'There were in the brigade other companies and battalions, in some of which they tried to carry out [*CTB* operations]. The result was pitiable. No Egyptian soldier was harmed. On the other hand, a few Bedouin fell ill with typhus, as did a few of our soldiers who mistakenly believed that they had found bottles of

gazoz [a carbonated soft drink], and drank from them.' Aharoni, who regarded the episode as a 'war crime', noted that these 'bacteriological weapons' had been used in the 1948 War 'in a most *shlimazeli* way'.[125]

It is possible that the 'cute lass' sent by HEMED and encountered by Aharoni in 8th Battalion HQ was Ayala Rubinstein. She is identified in one HEMED document as a 'biologist' with the rank of sergeant,[126] and was probably one of the Katchalsky brothers' Hebrew University students. She appears to have been a regular 'Neptune' courier to the Negev that summer. In July, General Staff/Operations ordered Air Force/Operations to fly Rubinstein to Dorot, where Negev Brigade HQ was based, with a '10-kilogram load'.[127] In summer 1948 the Israel Air Force was minuscule; even ferrying generals and brigade commanders between HQs and the front lines was unusual and prioritised. That Yadin's bureau made a point of ordering the air force to ferry a lowly sergeant to the Negev speaks to the importance accorded *CTB* by the acting chief of general staff.

CTB was also activated that summer or autumn in the Galilee. Rafi Kutscher (later, Kotzer), who in June 1948 set up the Commando Unit of the 12th Battalion of the Golani Brigade and commanded it, wrote in his memoirs that 'one day there arrived a HEMED man with a [IDF] General Headquarters envelope with instructions to help him and keep [the mission] top secret'. Kutscher complied and, after the mission failed, he was shocked to learn that its objective had been 'to poison the well of [the village of] ʿAylabun in order to neutralise the military force [that is, the ALA unit] there'. When the commander of the Golani Brigade, Nahum Golan, learned about the affair, he reprimanded Kutscher and, when confronted with the written order, told Kutscher curtly that he would deal with the matter.[128] The incident took place sometime before the 12th Battalion conquered ʿAylabun on 30 October 1948.

To date, just one strictly contemporary Palestinian source has come to light referring to, and condemning, Israel's resort to biological weapons in 1948 (for the Arab Higher Committee report of July 1948 see below). But – despite ʿArif al-ʿArif 's allegation, published in 1956, about the Israeli biological attack on Acre in May 1948 – references to Israeli biological warfare in 1948 almost never figure in later Palestinian writings. Avner Cohen highlighted this in his article from 2001. His scan of Palestinian mainstream Internet sites 'turned up no references to Israeli use of bacteriological warfare, biological warfare or well poisonings during the war' and he assumed that either the warfare was ineffectual or that the Palestinians were not aware of it, with so much violence taking place all around.[129] Salman Abu Sitta, the Palestinian researcher writing in 2003, bases his account of Israeli biological warfare in 1948 on Western, Israeli and Egyptian sources – not on Palestinian ones.[130]

The one contemporary exception, duly mentioned by Cohen and Abu Sitta, is the undated memorandum publicised in July 1948 in New York by the Arab Higher Committee Delegation for Palestine. The memorandum charged that Palestine's Jews had committed numerous war crimes, including resorting to bacteriological warfare. 'For several years the Zionists have planned and prepared for the use of bacteriological warfare. To that end they set up laboratories in Palestine. The Jews plan to use this inhuman weapon against the Arabs in the Middle East in their war of extermination. When cholera broke out in Egypt in November 1947, and in Syrian villages on the Palestine-Syria border about February 1948, there was some, but not conclusive, evidence that Zionists were responsible for this outbreak of this plague.'[131] The memorandum then quotes the NBC correspondent Leon Pearson, who on 12 January 1948 reported from Paris that 'the Jewish underground is preparing to launch bacteriological warfare against the Arabs', and an unnamed 'Christian American citizen' who heard in February 1948, in Rio de Janeiro, an IZL officer, Zvi Kolitz, declare that after the British pull out 'we shall bring cholera microbes to Cairo, to Baghdad, to Damascus and Amman'. Finally, the memorandum quotes the two above-mentioned Egyptian statements about the attempt to poison wells near Gaza in May 1948. Strangely, the memorandum made no reference to the Acre typhoid epidemic or of well-poisonings in Arab villages.

As for the accusation regarding the cholera outbreaks in Egypt and Syria, W. Seth Carus has marshalled evidence that, at the time, Egyptian officials told the World Health Organization that the disease originated in India, while others accused the Soviet Union and the British of causing the outbreak. As for Syria, a Lebanese journal reported that the Damascus police arrested several Zionists who caused the cholera outbreak in order to impede the mobilisation of the 'People's Army', but the *New York Times* stated that 'official quarters' did not corroborate the story.[132]

Zvi Kolitz (1912–2002) was indeed a member of the IZL and for a time represented the right-wing Revisionist Movement in South America;[133] it is conceivable that he fantasised about spreading cholera in Arab capitals, but Israeli biological warfare was the work of the Haganah/IDF, not of the IZL.

But, in a sense, the Arab Higher Committee memorandum was anticipatory. On 26 September 1948, Israel's leaders decided to selectively extend *CTB* to the belligerent Arab states around Israel. Yadin signed the cables initiating the process but, without doubt, the authorisation – if not the initiative itself – originated with Ben-Gurion; it is inconceivable that Yadin would have taken such a step off his own bat.

Two events that day probably persuaded Ben-Gurion to order the activation of *CTB* against surrounding Arab states or, more specifically, against Egypt. The second was the cabinet's rejection of Ben-Gurion's proposal that afternoon that the IDF launch an offensive against the Arab Legion aimed at conquering part or all of the West Bank, including East Jerusalem. The proposal was made against the backdrop of the *de facto* stalemate in the war, which Israel regarded as onerous and unsustainable. The truce imposed by the United Nations in July left the Egyptian Army holding Israeli territory (i.e. areas awarded in the UN partition resolution to Israel) in the south and a chain of positions between the Mediterranean (Majdal) and the Hebron Hills which effectively cut off the two dozen settlements in the Negev from the rest of the Jewish state and besieged them. It also left the Arab Legion holding an expanded 'West Bank', with its guns potentially threatening the centres of Jewish population in West Jerusalem and the coastal plain. More immediately, on 24 September 1948, despite the truce, Arab irregulars, operating out of the West Bank, overran an IDF position near present-day Modi'in, killing twenty-three Israeli soldiers, a serious provocation. Ben-Gurion was insistent that the stalemate had to be broken. But the cabinet – very unusually – rejected Ben-Gurion's proposal to attack eastward. What remained was to strike southward, at the Egyptian army, to break through to the besieged settlements and drive the Egyptians out of Palestine altogether or, at least, out of the northern Negev. To accompany and facilitate the contemplated offensive, Ben-Gurion, it appears, believed that it would be helpful to simultaneously 'harass' the Egyptian homeland with a bacterial campaign.

But the notion of such harassment was probably also triggered by another 'event' on 26 September, Ben-Gurion's meeting, just before the fateful cabinet session, with Yosef Weitz, an important Zionist executive and an 'expert' on the unfolding Arab refugee problem. Weitz, according to his diary entry, had come to the prime minister to warn of the threat of a mass Arab refugee return to the territory of Israel or to territory that was about to fall into Israeli hands. What was to be done? asked Ben-Gurion. 'Harassment [*hatrada*]', said Weitz, 'harassment using all means', designed to prevent the return of the refugees from across the borders.[134] Ben-Gurion's diary entry about the meeting was slightly different. 'What is to be done?' asks Ben-Gurion. Weitz: 'If not [re-starting the] war, then they [the Arabs] must be harassed without end.' Weitz, or Ben-Gurion, seemed to be speaking of something above and beyond the refugee threat. Ben-Gurion: 'Who would handle the harassment?' Weitz: '[Reuven] Shiloah ….' 'Weitz asks that I instruct Shiloah,' Ben-Gurion jotted down.[135] It seems that the notion of 'harassment', as a complement or alternative to war-making, had been planted in Ben-Gurion's mind.

Following the cabinet meeting that had left Ben-Gurion frustrated and angry, but with his gaze now firmly set on Egypt, Ben-Gurion met with Yadin and set the plan in motion: *CTB* was to be activated abroad, starting with Cairo.

But who would carry out the attack – transport the bacteria to Egypt and pour them into the wells or waterworks of Cairo? Political Department operatives posing as tourists or department agents already in place? Or Arab Platoon *mistaʿarvim*? And who would run the show? Activating *CTB* abroad thus brought to the surface the problem that was to plague Israel's intelligence services for decades: who was responsible for missions abroad, the Political Department (in 1951 reorganised and renamed the *Mossad – ha-Mossad le-modiʿin u-le-tafqidim meyuhadim* – the Institute for Intelligence and Special Duties) – or the IDF Intelligence Service (renamed, at the end of 1948, the Intelligence Department and in 1954, the Intelligence Division – or *Aman* [*agaf ha-modiʿin*])? And if the *mistaʿarvim* operated abroad, who would control them?

The organisational issues had not yet been resolved but time was pressing. That day, 26 September, Yadin instructed Moshe Shalovsky (Shilo), of HEMED B, to contact Shiloah 'concerning the activation of *Cast Thy Bread* abroad [*be-qesher le-hafʿalat Shallah Lahmekha be-hu'l*]'.[136] In a separate cable, also that day, Yadin asked Levi Eshkol, Ben-Gurion's chief aide in the Defence Ministry (later, Ben-Gurion's successor as Israel's prime minister, 1963–69), to arrange Binyamin Gibli's travel to and stay in Europe, specifying 'Paris', 'for two months'.[137] Gibli was the IDF Intelligence Service's head of combat intelligence and, in effect, the service's deputy director. He was now tasked with rolling out *CTB* abroad, as emerges from the testimony of Asher Ben-Natan, the Political Department's head of operations, then based in Paris. Interviewed in 2008, Ben-Natan related that 'that autumn' Gibli had shown up in Paris and given him 'a capsule [container?] to be used for poisoning wells in Cairo'. But an uneasy Ben-Natan proceeded to question the operation. He contacted his boss, Shiloah, and – apparently on Shiloah's orders – 'scrapped [the plan] forthwith… I was left with the poison capsule, and in the end, I destroyed it in the sewer.'[138]

But as emerges from the available documentation, it was not only Cairo that was in Israel's sights. Already on 21 September 'Gamliel' (Cohen) reported from Beirut to the Arab Platoon's HQ about possible targets for sabotage operations in Lebanon, including 'bridges, railway tracks, water and electricity sources…'. Gamliel was one of a squad of Arab Platoon *mistaʿarvim* planted in Beirut back in January 1948 to carry out intelligence and sabotage operations.[139] Later, in January 1949, two months before Lebanon and Israel signed the armistice agreement ending the war between them, the Political Department (codenamed '*Daʿat*') again asked the *mistaʿarvim* in Beirut to investigate and report back on potential targets, including the waterworks – 'water sources, central reservoirs. If possible, [supply] maps of water pipelines' – in the main towns in Lebanon and Syria.[140] The implication would seem to be that Israel was considering these waterworks as potential targets for eventual attack, biological or otherwise. But as far as we know, in the end no Arab cities were biologically attacked at any point in 1948 or subsequently.

Conclusion

To the best of our knowledge, given the evidence available, the Yishuv's political and military leaders made no preparations before the outbreak of the 1948 war in November-December 1947 to use biological weapons should hostilities with Palestine's Arabs, or the Arab states around, erupt. The start of *CTB* can be clearly traced to late March-April 1948 and was prompted by the – for the Yishuv – adverse turn of events in the battlefield during the preceding weeks, and by the prospect of imminent invasion of the country by the armies of the surrounding Arab states.

The Yishuv's decision to use the bacteriological weapons was taken at the highest level of the government and military and was, indeed, steered by these officers, with Ben-Gurion's authorization, through the campaign. And while not knowing the campaign's full extent, the Arab side – or, at least, the Egyptian government – understood, from late May 1948, that this was no local affair launched by junior officers. As Egyptian Prime Minister Nuqrashi Pasha told

the UN Mediator for Palestine, Count Folke Bernadotte, at their meeting on 29 May, shortly after the Egyptian capture of the two Arab Platoon operatives outside Gaza contaminating 'the water supply of the Egyptian army' with 'vials of cholera and dysentery germs': 'The Egyptian Government held the Jewish authorities responsible for this since this sort of thing had to be planned inasmuch as it was not possible to buy germs for such purposes in retail shops. Scientists and high officials had to be involved… [in] such well-planned acts.'[141]

What had the scientists of HEMED B, Ben-Gurion, Yadin, and the soldiers who dispensed the bacteria, hoped to achieve? Unlike the poison(s) given to Kovner to kill Nazis in 1945, the typhoid and dysentery germs dispensed in 1948 were basically non-lethal. The scientists and Haganah/IDF officers probably hoped that they would induce disease, an epidemic even, which would bar militiamen from returning to their villages and attacking Jewish settlements and traffic, reduce the Arabs' ability to prevent Jewish conquest of towns and villages, and create medical havoc among invading Arab troops. As the scientists knew, the availability of antibiotics and vaccines would keep deaths to a minimum (as apparently occurred), but Arab combat effectiveness would be reduced.

But the occasional dispensation of the bacteria – in the Negev, in the Jerusalem-Jericho area – apparently had no or very little effect on the advance or performance of the invading Arab armies (though it may have persuaded refugees to refrain from returning to villages whose wells were polluted). The apparent ineffectiveness of *CTB* and problems in producing and transporting the weaponised bacteria may well have curbed enthusiasm for the campaign among Israeli defence executives. What was the point?

The use of the bacteria was apparently fairly limited in Israel/Palestine during April-December 1948, and apart from Acre, seems to have caused no epidemic and few casualties. At least, that is what emerges from the available documentation. Perhaps the meagre use and reach of *CTB* was partly due to the opposition the campaign gave rise to, both high and low, in Israel's defence establishment. Clearly it triggered moral repugnance. The leading Zionist Chaim Weizmann appears to have been seriously distressed; Shelomo Gur, the administrative director of HEMED, later claimed that he had opposed biological warfare in 1948 and had been happy that HEMED B had been taken out of his hands;[142] Reuven Shiloah apparently opposed the use of the bacteria in Cairo; Aharoni opposed their use by the Palmah in the Negev; Guttman (ineffectually) opposed the well-poisoning in Gaza; and Kotzer was dissentient in the ranks of the Golani Brigade in the north (and his brigade commander, Nahum Golan, reprimanded him for assisting the poisoning attempt at ʿAylabun).[143] Ben-Gurion, Yadin and HEMED B may have been deterred from wider use of the bacteria by fear of triggering wider opposition within the defence establishment; perhaps, too, they feared that knowledge of what was happening would leak to the public.

Disclosure statement

No potential conflict of interest was reported by the authors.

Notes

1. B. Morris, *The Birth of the Palestinian Refugee Problem Revisited* (Cambridge: Cambridge University Press, 2004), p.230; U. Bachrach, *Be-Koah ha-yedaʿ: Peraqim be-toldot heyl ha-madaʿ (HEMED)* [By the Power of Knowledge: Chapters in the History of the Science Corps (HEMED)] (Tel Aviv: 2009), pp.76–79. The paragraphs on bio-warfare were censored in this book's second edition (Ben Shemen: Modan, 2015); some of the censored information was reintroduced into the English version, *The Power of Knowledge: HEMED—The Israeli Science Corps* (Monterey/ Tel Aviv: Samuel Wachtman's Sons/Dekel Publishing House, 2016), pp.130–35.
2. S. Leibowitz-Dar, 'Haydaqim be-sherut ha-medina' [Microbes in the Service of the State], *Hadashot* (supplement), 13 Aug. 1993, pp.6–10; A. Cohen, 'Israel and Chemical/Biological Weapons: History, Deterrence, and Arms Control', *The Nonproliferation Review* 8.3 (2001), pp.27–53 at 29–32; S. Abu Sitta, 'Traces of Poison –

Israel's Dark History Revealed', *Al-Ahram Weekly*, 27 Feb. -5 Mar. 2003, accessible at https://www.plands.org/en/articles-speeches/articles/2003/traces-of-poison%E2%80%93israels-dark-history-revealed. The article by Leibowitz-Dar is the most important; the other two rely on it extensively.

3. For the post-1948 suppression of evidence, see H. Shezaf, 'Burying the Nakba: How Israel Systematically Hides Evidence of 1948 Expulsion of Arabs', *Haaretz* (English edition), 5 July 2019, accessible at https://www.haaretz.com/israel-news/.premium.MAGAZINE-how-israel-systematically-hides-evidence-of-1948-expulsion-of-arabs-1.7435103; and O. Aderet, 'Hashtaqat ha-arkhion: Vaʿadat sarim metzanzeret homer ʿal pishʿey milhama be-'48' [The silencing of the archive: a ministerial committee censors material on war crimes in 1948], *Haaretz* (Heb.), 8 Oct. 2021.
4. A. Aharoni, *Mi-yomano shel muʿamad li-vegida* [From the diary of a candidate for treason] (Tel Aviv: Sifriyat Poʿalim, 2000), p.109. In one IDF cable the operation was indeed referred to merely as *shallah*: Harel HQ to Eldad, Etzioni, 6 May 1948, IDFA 5254/1949—144. Our thanks to Gilead Alon for having brought Aharoni's book to our attention.
5. See note 1. In turn, we would like to thank Milstein for providing us with clues that pointed us in the right direction among the IDFA's files.
6. For an overview of the 1948 war, see B. Morris, *1948, A History of the First Arab-Israeli War* (New Haven and London: Yale University Press, 2008) or D. Tal, *War in Palestine 1948: Strategy and Diplomacy* (London and New York: Routledge, 2004). For coverage of specific aspects of the war, see A. Shlaim, *Collusion Across the Jordan: King Abdullah, the Zionist Movement, and the Partition of Palestine* (Oxford: Clarendon Press, 1988), and A. Ilan, *The Origin of the Arab-Israeli Arms Race: Arms, Embargo, Military Power and Decision in the 1948 Palestine War* (Basingstoke and London: Macmillan, 1996). Journalist and historian Ian Black, in *Enemies and Neighbours: Arabs and Jews in Palestine and Israel, 1917–2017* (New York: Atlantic Monthly Press, 2017), a pro-Palestinian history, wrote: 'In the aftermath of the Holocaust, the [Yishuv's] sense of existential threat was all too real.'
7. Palmah HQ, 'Logbook of Our Units' Operations', Yad Tabenkin Archive, 15–46, 165//1. The Palmah, the acronym of *plugot mahatz* (strike companies), was the elite arm of the Haganah.
8. Ephraim to the Council [Palmah HQ], 'Reports', 17 Jan. 1948, Yad Tabenkin Archive, 12–4, 22/13.
9. Stockholm International Peace Research Institute (SIPRI), *The Problem of Chemical and Biological Warfare*, 6 vols. (Stockholm and New York: Almqvist & Wiksell, 1971-75), iii: *CBW and the Law of War*, esp. pp.71, 155–58.
10. Israel's Archives Law (1955) is liberal and its governmental implementation over the years has been largely enlightened. But during the past two decades, there has been a tendency among official archivists, especially in IDFA, to increase restrictions in the declassification process, and, indeed, documents opened to researchers in the 1990s (when Yitzhak Rabin was Defense Minister or Prime Minister), as regarding for example the Deir Yassin killings (see below), have since been re-classified and barred to researchers. The main file or files on *CTB* – probably housed in the Nes Ziona Biological Institute – were never opened to researchers and remain classified. But IDFA files relating to various IDF units in 1948 are largely open, and it is among these, in dispersed fashion, that we found most of the documents referred to in this article regarding *CTB*. For discussion of Israel's Archives Law and its implementation, and the recent re-classification of documents that were once open, see material put out by the ʿAkevot Institute for Israeli-Palestinian Conflict Research and Shezaf, 'Burying the Nakba', *Haaretz*, 5 July 2019.
11. Later the IDF's chief of general staff (1949–52), a famous archaeologist, and Israel's deputy prime minister (1977–81).
12. On HEMED see Bachrach, *The Power of Knowledge*.
13. Irgun ha-Haganah ('the defence organisation'), commonly called the Haganah ('the defence'), the Yishuv's national militia, officially changed its name and became the Israel Defense Forces (IDF) on 1 June 1948. The Haganah's/IDF's chief of general staff Yaacov Dori was incapacitated by illness through most of the 1948 War. His functions were filled by Yadin.
14. Etzioni [Brigade OC] to General Staff, 14 May 1948, 16:55, General Staff/Operations Logbook, IDFA 464\1954—1: 'We have no direct connection to Har-Tuv and so we cannot activate the *Cast Thy Bread* project [there]. This can be done only by the Givati [Brigade].'
15. The Katchalsky brothers went on to have illustrious careers. Aharon Katzir, a professor of physical chemistry at the Hebrew University of Jerusalem and one-time president of the Israel Academy of Sciences and Humanities, was among those killed by Japanese terrorists working for the Popular Front for the Liberation of Palestine in an attack at Lydda (Ben-Gurion) International Airport in 1972; Ephraim Katzir, a professor of biophysics at the Weizmann Institute of Science, served as Israel's president during 1973–78.
16. D. Porat, *Meʿever la-gashmi: Parashat hayyav shel Abba Kovner* [Beyond the Reaches of Our Souls: The Life and Times of Abba Kovner] (Tel Aviv: ʿAm ʿOved, 2000), pp.236–37; Porat, *Li naqam ve-shillem: Ha-Yishuv, ha-shoah u-qevutzat ha-noqmim shel Abba Kovner* ['To me belongeth vengeance and recompense': The Yishuv, the Holocaust and the Abba Kovner Group of Avengers] (Haifa: Haifa University Press, 2019), pp.163–66.

17. B. Z. Kedar, 'And I Need Germs and Poisons for the War of Independence', *Haaretz Literary Supplement*, 2 Oct. 2020, p.4 (Hebrew). On US research on defensive and offensive biological warfare during the Second World War, in which scientists from various universities took part, see S. H. Harris, *Factories of Death: Japanese Biological Warfare 1932–45 and the American Cover-Up* (London and New York: Routledge, 1994), pp.149–59; and S. Endicott and E. Hagerman, *The United States and Biological Warfare: Secrets of the Early Cold War and Korea* (Bloomington and Indianapolis: Indiana University Press, 1998), pp.27–36. The Camp Detrick scientists 'monitored independent studies of cholera […] and a Canadian study of typhus': ibid., p.31. In his memoir, Admiral Leahy, President Franklin D. Roosevelt's Chief of Staff, expressly mentions the 'terrible instruments of bacteriological warfare that had been developed in our laboratories and arsenals' and refers to the possibility that an enemy might 'succeed in contaminating the water supply serving the millions who live in the Greater New York city area': W. D. Leahy, *I Was There: The personal story of the Chief of Staff to Presidents Roosevelt and Truman based on his notes and diaries made at the time* (London: Gollancz, 1950), p.512. Rittenberg or some other American scientist may have told Kachalsky about the Americans' investigation, during 1945-1947, of Japan's biological warfare program during the Second World War. Harris, *Factories*, p.111, summarizes what a Japanese informant told the American investigators about one episode in the Japanese biological warfare project: 'One of the expedition's first objectives was to contaminate all water sources available to the enemy. In Ping Fan [outside Harbin, Manchuria] typhoid and paratyphoid germs were placed into peptone bottles labelled "Water Supply," and transported by aircraft to Nanking. They were then brought to Unit Ei 1644's base, where the contents of the bottles were placed into metal drinking canteens or into small glass bottles… The flasks and bottles were given to soldiers entrusted with the responsibility for dropping them into wells and marshes, and in people's homes.'
18. Part of Katzir's 1998 interview with Porat, published by Kedar in 'And I Need Germs'.
19. E. Katzir [Katchalsky], *A Life's Tale*, tr. R. Rubin (Jerusalem: Carmel, 2009), p.104.
20. For the order officially establishing HEMED, signed by Zvi Ayalon, the Haganah's deputy chief of general staff, see Bachrach, *The Power of Knowledge—HEMED*, pp.65–66.
21. Ibid., p.116.
22. Cohen, 'Israel and Chemical/Biological Weapons', p.30, based on the author's interview with Colonel Shelomo Gur; and IDF General Staff/Operations to Piqud Ikhsun (?—illegible), 15 Aug. 1948, IDFA 2315\1950—21 ('We are especially interested in a speedy completion of the laboratories of the Science Department by you in Abu Kabir …')
23. Bachrach, *The Power of Knowledge—HEMED*, pp.131–39. Keynan was later professor of microbiology at the Hebrew University and the university's vice-president for research and development.
24. Y. Ratner, *Hayyay va-ani* [My life and me], tr. from German by Rina Klinov (Jerusalem: Schocken, 1978), pp. 360–70. We were able to consult the German original.
25. D. Ben-Gurion, *Yoman ha-Milhama, Milhemet ha-ʿAtzmaut, Tasha"h-Tasha"t* [The War of Independence, Ben-Gurion's Diary], ed. G. Rivlin and E. Oren, 3 vols. (Tel Aviv; Ministry of Defense, 1982), i, p.336 (entry for 1 April).
26. For Dayan's codename 'Magi', see G. Rivlin and A. Rivlin, *Zar lo yavin: Sefer Ha-kinuyim* [A stranger will not understand: the book of code names] (Tel Aviv: Maʿarakhot, 1988), p.266.
27. Yadin to Etzioni, 7 April 1948, IDFA, 19:00, IDFA 5440/1949—29.
28. General Staff/Operations/Administration to General Staff Mata'm, 'The Staff Unit', 16 May 1948, IDFA 2315/1950—21.
29. In 1942 Dayan had personally conveyed suitcases full of weapons from Palestine to Jewish defence activists in Baghdad following the Farhud, the Iraqi pogrom against the city's Jewish community the year before: S. Teveth, *Moshe Dayan. A Biography* (Jerusalem: Schocken, 1972 [Hebrew]), pp.253–54. Dayan went on to become Israel's defence minister (1967–74) and foreign minister (1977–79).
30. Assi Dayan, director, 'Ha-Hayyim ki-Shmuʿa' ('Life as a rumour') (2012), minute 4:06. Our thanks to Ya'ir Patish for having drawn our attention to this film.
31. Magi to Yadin, undated, IDFA 5440/1949—14.
32. Yadin to Etzioni, 10 Apr. 1948, 17:30, IDFA 5440/1949—29.
33. Deir Yassin was an Arab village just west of Jerusalem, attacked and conquered by dissident right-wing Jewish forces, belonging to the IZL (the 'Irgun') and the LEHI (called the 'Stern Gang' by the British), with some Haganah support. The Arabs, the British and the Haganah alleged that the dissident paramilitaries had carried out a massacre of the villagers during and after the battle.
34. Magi to Yadin, 13 Apr. 1948, 01:30, IDFA 5440/1949—9.
35. Moshe Neptune to Yadin for Aleph Neptune (Keynan), 16 April 1948, 18:45, IDFA 5440/1949—22. 'Neptune' – HEMED B – was defined in a General Staff/Operations cable as 'a special department of HEMED linked to General Staff/Operations [*mahlaqa meyuhedet shel HEMED ha-qeshura kagam* (*sic*, should be *le-agam*]' (General Staff/Operations to Manpower Division, 6 July 1948, IDFA 2315/1950—21). Keynan's first name was 'Alex', which in Hebrew begins with the letter 'Aleph', the first letter of the Hebrew alphabet.

36. HEMED to Moshe Mizrahi, 22 April 1948, 12:00, IDFA 5440/1949—31. From 22 April, Dayan, previously using the codenames 'Magi' and 'Moshe Neptune' now began to be referred to, and began signing his cables, as 'Moshe Mizrahi'. We do not know why the change from 'Magi' to 'M. Neptune' or 'Moshe Neptune' to 'Moshe Mizrahi' or 'M. Mizrahi' occurred in the cable traffic. See note 44 below.
37. Moshe Neptune (Dayan) to Yadin for Aleph Neptune (Keynan), 22 Apr. 1948, 15:30, IDFA 5440/1949—1.
38. Moshe Neptune to Yadin for Aleph Neptune, 23 Apr. 1948, 10:20, IDFA 5440/1949—22.
39. Moshe Neptune to Yadin for Aleph Neptune, 23 Apr. 1948, 13:15, IDFA 5440/1949—22.
40. Oded to Elisha [?] and Yadin, 13:30, 22 Apr. 1948, IDFA 1301/1949—406.
41. Etzioni to Yadin, 27 Apr. 1948, 09:05, IDFA 5440/1949—22.
42. Etzioni to Yadin, 27 Apr. 1948, 09:50, IDFA 500/1948—52, General Staff/Operations logbook, entry for 27.4.48.
43. Yadin to Etzioni, apparently sent 1 May 1948, 20:00 (received 2 May 1948, 03:30), IDFA 5440/1949—10. (The dispatch date on the cable is unclear.)
44. 'M. Neptune' to Yadin for Neptune, 2 May 1948, 19:45, IDFA 5440/1949—21. The identity of Dayan/Magi with Moshe Neptune and Moshe Mizrahi is self-evident from the flow of the cables. We do not know why Dayan at this time used the codenames Moshe Neptune and Moshe Mizrahi interchangeably. Given *CTB*'s ultra-secret status, it makes sense that Dayan ('Magi') was ordered to adopt a new codename specifically for use in that operation. But we do not know why he used alternatively two new codenames ('Moshe Neptune' and 'Moshe Mizrahi'). The present cable reinforces the identity of Moshe Neptune with Moshe Mizrahi, as it carries the signature 'Moshe Mizrahi' at the bottom (while identifying the sender, at the top of the page, as 'M. Neptune'). The cable following this cable (numbered '639' in the file), 'Moshe Mizrahi' to 'Heli' (?), 2 May 1948, 18:40 (No. '640'), is also signed 'Moshe Mizrahi' at the bottom (IDFA 5440/1949—21).
45. Harel HQ to Eldad, Etzioni, 6 May 1948, IDFA 5254/1949—144.
46. Yadin to Etzioni, 7 May 1948, 20:00, IDFA 5440/1949—25. There is a cable in IDFA (Yadin to Haganah Air Service, 7 May 1948, IDFA 2384\1950—2) which probably relates to Dayan's transportation problem at this time. Yadin berates the Air Service, the Haganah's pre-state air force, for allotting a place in a plane to an 'engineer', which resulted in 'deferring the shipment of urgent material [*homer dahuf*] for a very urgent operation [*le-miyza dahuf beyoter*]'.
47. Etzioni to Yadin, 8 May 1948, 12:30, IDFA 5440/1949—17.
48. Yadin to Etzioni, 9 May 1948, 15:40, IDFA 5440/1949—25.
49. Moshe Mizrahi to Yadin for Neptune, 19 May 1948, 09:00, IDFA 5440/1949—41.
50. Moshe Mizrahi to Yadin for Neptune, 18 May 1948, 15:05, IDFA 5440/1949—40.
51. Aviad [Neptune] – probably Keynan's deputy – to Moshe Mizrahi, 18 May 1948, 12:00, IDFA 5440/1949—31: 'The maps have arrived.' The Harel Brigade HQ logbook records that on 10 May, Palmah HQ instructed the Harel Brigade's medical officer 'urgently… [to] give an active vaccine against typhoid' to the troops (Harel HQ logbook, 10 May 1948, Yad Tabenkin Archive, 12–4, 53/1).
52. General Staff/Operations to OC Sodom Area, 2 July 1948, IDFA 2315/1950—21.
53. Moshe Mizrahi to Yadin for Neptune, 13 May 1948, 16:00, IDFA 5440/1949—40.
54. Harel Brigade HQ to 1st and 2nd Battalions, etc., 'Operational Order No. 13', 5 May 1948, IDFA 5254/1949—144. In other files, the word 'economic' was deleted by IDFA censors from (other) copies of this order.
55. Mizrahi to Yadin for Neptune, 15 May 1948, 13:45, IDFA 5440/1949—40.
56. Mizrahi to Yadin for Neptune, 16 May 1948, 17:30, IDFA 5440/1949—40.
57. Mizrahi to Yadin for Neptune, 26 May 1948, 09:45, IDFA 5440/1949—41.
58. D. Coren, *ha-Galil ha-Maʿaravi be-Milhemet ha-ʿAtzmaʾut* [Western Galilee in the War of Independence] (Tel Aviv: Ministry of Defense, 1988), pp. 43–44.
59. Interview with Dr Uri Milstein, 2020, who had interviewed Pundaq sometime in the 1980s. According to Milstein, Pundaq took him to the spot near Kabri where he had poured the bacteria into the water channel after he had received them from Dayan. In his memoirs, *Shuʿal Qeravot, 1919–2005* [The warrior fox, 1919–2005], ed. E. Stark (n.p., 2006), Pundaq does not mention the incident. Interviewed in 1993 by Sarah Leibowitz-Dar, he angrily responded: 'Why are you looking now for problems relating to forty-five years ago. I never did any such thing in my life. I do not know anything about this. What will you gain by publishing this even if it …' and at this point, mid-sentence, he clammed up. See Leibowitz-Dar, 'Haydaqim', p.8. It appears that HEMED B initially used test tubes or glass bottles to convey the bacteria, later shifting to thermos flasks (see Moshe Vav to On (Aharon Katchalsky), 16 June 1948, 18:30, 5440\1949—35 (*'ha-termosim shel alex lo higiʿu* [Alex's thermos flasks have not arrived]').
60. For a lucid overview see Mustafa Abbasi, 'The Fall of Acre in the 1948 Palestine War', *Journal of Palestine Studies* xxxix (2010), pp.1–22.
61. The unsigned report, 'Ittihad Hospital, Acre, 18 July 1948', IDFA 922/1952—60, spoke of 'a terrible typhoid epidemic', spread chiefly through the water supply and affecting 'mainly children and infants'. In fact, typhoid and typhus are different diseases, but the Jews/Israelis, Acre townspeople, and, often, foreigners

(British and Red Cross personnel) referred to the Acre outbreak as 'typhus'. The 'water-borne' epidemic generated by the Haganah was, of course, typhoid, but it is possible that the town suffered simultaneously also from cases of typhus, commonly transmitted by lice and fleas.

62. Mayor of Acre, 3 May 1948, apparently forwarded by the Arab Liberation Army's garrison in the town, belonging to the 2nd Yarmuq Battalion, to ALA HQ, Damascus, IDFA 100001/1957—273. The ALA was a Syrian-organised force, sponsored by the Arab League, some 3000–5000 strong, of Arab volunteers, mostly from Syria, Iraq and Palestine, sent to Palestine piecemeal, starting in December 1947, to help the Palestine Arab militias.
63. 'Notes of a conference held at the Lebanese Red Cross Hospital on the May 6th: Typhoid epidemic in Acre', Archives du Comité International de la Croix-Rouge (ACICR), Geneva, B G 003-82.17, Mission de Maximilien de Meuron à Haïfa, 1948, Rapport No. 5 (appendix). The 'Notes' are signed by Brigadier Beveridge.
64. ACICR, B G 003-82.17, Mission de Maximilien de Meuron à Haïfa, 1948, Rapport No. 3.
65. Unsigned report, 'Ittihad Hospital Acre, 18 July 1948', IDFA 922/1952—60.
66. The Usama b. Zayd Scouts Company of Acre, 9 May 1948, to the commander of the Acre garrison, 9 May 1948, IDFA100001/1957—273.
67. Hiram to ?, 'Reliable Information Bulletin for 9.5.48', IDFA 5942/1949—23.
68. Haganah Intelligence Service (SHAI) Arab Department, 'The Migration Movement of the Arabs of Palestine during 1.12.47–1.6.48', 30 June 1948, ha-Shomer ha-Tzaʿir—Yad Yaʿari Archive, (7) 10.10.95.
69. M. Carmel, *Maʿarkhot Tzafon* (Tel Aviv: Ha-Kibbutz ha-Meuhad, 1949), p.151.
70. Tzadoq Eshel, *Hativat Carmeli be-Milhemet ha-Qomemiyut* [The Carmeli Brigade in the War of Independence] (Tel Aviv: Maʿarakhot 1973), p.175.
71. 'Segal', 'Carmeli Brigade Information Bulletin No. 3, for 7.5.48', IDFA 5942/1949—9.
72. Carmeli/Medical Service, to Daniel, Yehezqel, 6 May 1948, IDFA 6680/1949—3.
73. Carmeli/Medical Service, to doctors of 21st, 22nd battalions, etc, 6 May 1948, IDFA 6680/1949—3.
74. 'Micha' to town commander, 19 (?) May 1948, IDFA 922/1952—60.
75. See, for example, Dr Brinitzer to Acre Military HQ, 7 June 1948, IDFA 922/1952—60.
76. Senior Medical Officer, Department of Health, Haifa, to brigade physician, apparently from 9 June 1948, IDFA 922/1952—60.
77. ʿArif al-ʿArif, *Al-Nakba: Nakbat Bayt al-Maqdis wa-al-firdaws al-mafqud* [The Nakba: The Catastrophe of Jerusalem, or Paradise Lost], vol. 1 (Beirut: Institute for Palestine Studies, 2012 [1956]), p.421. His assertion that 'the water [i.e., the aqueduct] passes between the Jewish villages Eyn Sara and Shavey Zion' is inaccurate: the aqueduct runs to the east of Eyn Sara; the mention of '40' deaths seems highly exaggerated and is not reflected in any contemporary document. ʿArif al-ʿArif's passage on this score was summarized by Bayan al-Hout, *al-Qiyadat wa-al-muʾassasat al-siyasiyya fi filastin 1917–1948* [Leaders and Political Institutions in Palestine 1917-1948] (Acre: Dar al-Aswar, 1984), p.637.
78. Yadin to Etzioni, 14 May 1948, 09:45, IDFA 500/1948—29: 'This morning your proposal regarding [the evacuation of] ʿAtarot was approved. Act on it. [It was also] decided to evacuate Har-Tuv … Place in the wells material of the *Cast Thy Bread* type [*hashʾer ba-beʾerot homer mi-sug shallah lahmekha*]. Consult Moshe Mizrahi.' Neve Yaacov was abandoned – without Haganah General Staff authorisation – on the night of 16 May, after its defenders had beaten off an attack by ALA troops (see Ben-Gurion, *Yoman ha-Milhama*, ii, p.434, entry for 17 May 1948).
79. Etzioni to Yadin, 14 May 1948, 16:55, IDFA 5440/1949—40.
80. Mizrahi to Yadin, 15 May 1948, 17:30, IDFA 5440/1949—40.
81. Mizrahi to Yadin for Neptune, 19 May 1948, 09:00, IDFA 5440/1949—41.
82. Katchalsky left New York in early May and, in transit, spent a few days in Paris before catching a flight to Tel Aviv (Katzir, *A Life's Tale*, pp.106-107).
83. Ben-Gurion Diary, 1915–71, entry for 13 May 1948, Ben-Gurion University, Ben-Gurion Archives. When in 1993 Sarah Leibowitz-Dar asked Ephraim Katzir (Katchalsky) about the rumours that he brought the first germs by air on 14 May, he brushed the question aside with: 'These are beautiful dreams [i.e., fantastical] but they lack reality' (Leibowitz-Dar, 'Haydaqim', p.6). It is worth noting that HEMED B, while producing bacteria locally, continued to import 'materials' from abroad. In August HEMED scientist/operative Moshe Shalovsky (Shilo) was sent to Europe – 'Switzerland, Italy and France' – to purchase unspecified materials (see General Staff/Operations to L. Shkolnik (Eshkol), 15 Aug. 1948, IDFA 2315/1950—21. The cable is titled '*Shallah Lahmekha*'). General Staff/Operations requested a budget of 450 Israel pounds for Shalovsky's trip. Shilo was later professor of microbiology at the Hebrew University of Jerusalem.
84. Ben-Gurion, *Yoman ha-Milhama*, i, p.413, entry for 13 May 1948. Katzir, in his autobiography (*A Life's Tale*, p.106), quotes this censored version.
85. D[avid].B[en].G[urion]. to Yohanan [Ratner], 14 May 1948, private archive. A *mistaʿarev*, in Hebrew, is someone who 'acts or speaks like an Arab'; the plural form is *mistaʿarvim*.
86. See, for example, I. Galili and Y. Yadin (eds), *Atlas Carta le-Toldot ha-Haganah* [Carta Atlas of the History of the Haganah] (Jerusalem: Carta, 1991), p.114, 'Table of the balance of forces on 15 May 1948'; and

Ben-Gurion Diary, entry for 4 May 1947, Ben-Gurion University, Ben-Gurion Archives, which, giving breakdowns per state, estimated that the armies, including gendarmerie, of the neighbouring Arab countries mustered together more than 100,000 troops, without counting possible expeditionary forces from the Maghreb, Sudan, Yemen, and Saudi Arabia (some of which actually reached Palestine in 1948). In his subsequent history of Israel, *Medinat Yisrael ha-Mehudeshet* [The new-born State of Israel] (Tel Aviv: ʿAm ʿOved, 1969), i, p.71, Ben-Gurion stated that the Arab armies before the war mustered '153,405' soldiers. The Haganah at the start of the war had some 30,000 members and the two dissident Zionist paramilitary forces, the IZL and Lehi, together mustered at most about 3500 fighters. The cited *Atlas Carta* table shows that on 15 May 1948 the Arab armies had altogether 74 fighter and bomber aircraft, 40 tanks, and 140 pieces of field artillery. The Haganah at that point had one tank (without a gun), no combat aircraft, and five (ancient) field artillery pieces.

87. Yadin, minutes of meeting of 12 May 1948, in Israel State Archives, *Minhelet ha-ʿAm, Protocols 18 April—13 May 1948* (Jerusalem: State of Israel Archives, 1978, Hebrew).
88. Ratner, *Hayyai va-ani*, p.338. (Our translation is based on the German original).
89. Uri Milstein, 'Emunah mystit ba-madaʿ' [Mystical belief in science], *Davar,* 26 Oct. 1979. The statement does not appear in G. Gorodetsky (ed.), *The Maisky Diaries: Red Ambassador to the Court of St James's, 1932–1943*, tr. T. Sorokina and O. Ready (New Haven and London: Yale University Press, 2015).
90. A thoroughly censored 'history' of the unit was written by one of its veterans, Gamliel Cohen, and published by the Israel Defense Ministry Press and the Galili Center for Defense Studies, Tel Aviv, in 2002 (*Ha-mistaʿarvim ha-rishonim, Sippura shel ha-mahlaqa ha-ʿarvit shel ha-Palmah*—Under Cover, the Untold Story of the Palmah's Under Cover Arab Unit). A recent book on the subject, highlighting the unit's sociological problematics, is Matti Friedman, *Spies of No Country: Secret Lives at the Birth of Israel* (Chapel Hill: Algonquin Books of Chapel Hill, 2019).
91. See for example, B. Morris, 'Falsifying the Record: A Fresh Look at Zionist Documentation of 1948', *Journal of Palestine Studies* xxiv, no. 3 (Spring 1995), pp.44–62; B. Morris, *1948 and After: Israel and the Palestinians* (Oxford, 1994), pp.119–21. A clear case in point, detailed in these works, is the meeting on 5 June 1948 between Ben-Gurion and Yosef Weitz, director of the Jewish National Fund's Lands Department. Both men described in their diaries what was discussed. In order to prevent the return of Arab refugees to the abandoned villages, Weitz – according to his diary entry – outlined a series of measures, including the prevention of cultivation by Arabs of their abandoned fields, the destruction of villages and the renovation of other villages to facilitate the settlement of Jews in them. According to Weitz, Ben-Gurion agreed to these measures, and specifically approved the ongoing work of destruction that Weitz had already initiated, using JNF personnel and equipment. In his diary entry, Ben-Gurion omitted all reference to the destruction of villages or his support for the measure, or to his endorsement of the general policy of preventing the return of Arab villagers to their homes.
92. Yadin to Tzadoq, 17 May 1948, IDFA 2315/1950—21. See also Ben-Gurion, *Yoman ha-Milhama*, ii, p.433, entry for 17 May 1948: 'Moshe Dayan was charged with organising a commando [battalion] for the central [front]'.
93. Ben-Gurion, *Yoman ha-Milhama*, ii, p.437, entry for 18 May 1948: 'It was decided to appoint Moshe Dayan commander of the Jordan Valley front'.
94. Asaf Agin, *ʿEmeq be-Maʿarakha: ha-Maʿarakha li-vlimat ha-Plisha ha-ʿarvit be-ʿEmeq ha-Yarden—Mai 1948* [Valley at War: the halting of the Arab invasion of the Jordan Valley—May 1948] (Ganey Tiqva: Teper, 2021), p.280. It is possible that Dayan resumed his *CTB* duties, alongside his task of setting up the commando battalion (originally designated the 81st Battalion, later the 89th Battalion), on 23 May.
95. See Mizrahi to Yadin for Neptune, 11 June 1948, IDFA 5440/1949—11; Max Levy to Shalovsky through Yadin, 9 June 1948, 13:30, IDFA 5440/1949—11; Shelomo G[ur] to On (Aharon Katchalsky), 14 June 1948, 12:00, IDFA 5440/1949—34; Neptune to Mizrahi, 22(?) June 1948 (date unclear), 11:30, IDFA 5440/1949—28; and Mizrahi Boni, to General Staff/Operations/Neptune, 5 Aug. 1948, 08:13, IDFA 5440/1949—27.
96. Mizrahi to General Staff/Operations/Neptune, 26 July 1948, IDFA 5440/1949—27. We are not certain about what Mizrahi meant when he wrote in that cable 'all the water material of King David will arrive with Zelkind …' [*kol homer ha-mayim shel ha-melekh david yavo ʿim zelkind*].
97. The two Egyptian statements are quoted in full in 'Jewish Atrocities in the Holy Land. Memorandum to the United Nations Delegations submitted by the Arab Higher Committee Delegation for Palestine, New York', pp.5–6. We used the copy sent us by the Archive of the 'Akevot Institute for Israeli-Palestinian Conflict Research. The memorandum is undated, but since it was briefly summarised in the *New York Times* on 24 July 1948, it must have been made public a few days earlier. See T. J. Hamilton, 'Arab Assails Idea of Minority Shifts', *New York Times*, 24 July 1948, p.3.
98. Ben-Gurion, *Yoman ha-Milhama*, ii, p.462, entry for 27 May 1948.
99. The confession is reproduced both in Gamliel Cohen, *Ha-mistaʿarvim ha-rishonim*, p.235, and in Yeruham Cohen, *Le-or ha-yom u-va-mahshakh* [By light and in darkness] (Tel Aviv: ʿAmiqam, 1969), p.67. Yeruham Cohen says the two were executed on 22 Aug. 1948; Gamliel Cohen says the executions took place on 27 Aug.

100. According to a UP dispatch from Tel Aviv on 3 June, 'the official Israeli radio, broadcasting in Arabic, reported that Egypt would sentence to death two Jewish prisoners on the charge that they tried to poison wells in southern Palestine. "'Let us remind you that we have several hundred Egyptian prisoners of war in our hands", the broadcast said. "The killing of these two Jews will not remain unavenged."' (*New York Times*, 4 June 1948, p.3).
101. See Negev Brigade, 'Daily Summary—31.5.48', IDFA 6308/1949—140: 'Monitoring [Egyptian Army wireless transmissions]: This morning the medical officer received an order to be… in Majdal [Ashkelon] to carry out an analysis of the well-waters'.
102. In 1996, the well-known Israeli writer S. Yizhar (Yizhar Smilansky), who had served in the Givʿati Brigade in 1948, published the story 'Ha-mahsom ha-aharon' [The last obstacle], about the hastily prepared barrier on the Ashkelon-Qastina road in May 1948, 'beyond which everything was open [to the Egyptian army] up to Tel Aviv' (S. Yizhar, *Tsedadayim* [Asides] (Tel Aviv: Zmora-Bitan, 1996), pp. 107–18). Intriguingly, Yizhar dedicated the story to Alex Keynan.
103. Yeruham Cohen, *Le-or ha-yom*, p.66. According to Bachrach, 'We do not have any accurate information regarding whether Mizrachi and Horin were sent on a spying mission to obtain information concerning the movement of Egyptian forces, or whether they were sent to contaminate water sources' (Bachrach, *The Power of Knowledge—HEMED*, p.135).
104. Cohen, *Ha-mistaʿarvim*, pp.232–33.
105. 'Interview with Shemarya Guttman—on the *mistaʿarvim* from 13.6.1988, interviewer Yeruham Cohen', Kibbutz Naʿan Archive, Shemarya Guttman Papers, Box 1. Incidentally, in a separate interview with Guttman, conducted by Yisrael Galili (Kibbutz Naʿan Archive, Guttman Papers, 'Galili Interview with Shemarya Guttman', 8 Jan. 1982), Guttman described a three-hour-long meeting he had had with Ben-Gurion, apparently around the end of Nov.-early Dec. 1948, a few weeks before the final IDF offensive of the war, Operation Horev. In that operation, launched on 22 Dec., the Egyptian Army was driven out of Palestine (save for the Gaza Strip) and forced to sue for an armistice. At the Guttman-Ben-Gurion meeting, Guttman proposed that, should the tide of battle turn (if 'the Egyptians are overwhelming us and we have no choice'), Israel – using Guttman's *mistaʿarvim* unit – 'should blow up the Aswan Bridge' (i.e., the Aswan Low Dam, first erected in 1902), causing the Egyptians massive chaos at home. Ben-Gurion: 'You are willing to be responsible for whole villages being flooded?' Guttman: 'Firstly, it will not be me, you will be responsible.' According to Guttman, Ben-Gurion 'smiled—he liked my answer'. Guttman proposed sending a *mistaʿarvim* squad in advance to Egypt, with explosives, to prepare the attack. But 'Shiloah always opposed this, sending a squad to Egypt'. From the interview, it is unclear if Ben-Gurion approved the plan, but Guttman quotes him 'suddenly' saying: 'You shall receive all the [necessary] funds [presumably, to prepare the operation].' The story throws light on an apocalyptic mindset.
106. United Nations Security Council, Official Records, Third Year, 306th Meeting: 27 May 1948, undocs.org/en/S/PV.306.
107. See, for instance, 'British Ask in U.N. for 4-Week Truce', *New York Times*, 28 May 1948, p.4; 'On Britain's Advice, The Arabs Rejected the Ceasefire', *Haaretz,* 28 May 1948, p.1.
108. Quoted in B. Morris, 'Weizmann and the Arabs', in B.Z. Kedar (ed.), *Chaim Weizmann: Scientist, Statesman and Architect of Science Policy* (Jerusalem: Israel Academy of Sciences and Humanities, 2017), p.219. See also W. B. Jensen, H. Fenichel and M. Orchin, *Scientist in the Service of Israel. The Life and Times of Ernst David Bergmann (1903–1975)* (Jerusalem: Hebrew University Magnes Press, 2011), pp.155–56, 166–69.
109. Quoted ibid., p.156.
110. Alex to Ephraim, 19 June 1948, IDFA 5440\1949—35; and Ephraim Katchalsky, Jerusalem, to Alex HEMED, Tel Aviv, 20 June 1948, IDFA 5440\1949—11.
111. Yadin to ?, 11 June 1948, IDFA 2315/1950—21. From the content of the directive, it is clear that the intended addressees were IDF brigade OCs.
112. Moshe Mizrahi to Yadin for Neptune, 19 May 1948, 09:00, IDFA 5440/1949—41.
113. Negev Brigade HQ, 'Daily Summary—27.5.48', IDFA 6308/1949—140.
114. 'Sergei' (Sarig) to General Staff/Operations, untitled report, 8 July 1948, IDFA 5879/1949—22.
115. Negev Brigade HQ, 'Daily Summary—25.5.48', IDFA 6308/1949—140.
116. Negev Brigade HQ, 'Daily Summary—31.5.48', IDFA 6308/1949—140.
117. Negev Brigade HQ, 'Daily Summary—16.6.48', IDFA 6308/1949—140.
118. Negev Brigade HQ, 'Daily Summary—3.7.48', IDFA 6308/1949—140.
119. Negev Brigade HQ, 'Daily Report—14.7.48', IDFA 6308/1949—140.
120. Negev Brigade HQ, 'Daily Summary—27.5.48', IDFA 6308/1949—140.
121. Negev Brigade HQ, 'Daily Summary—9.6.48', IDFA 6308/1949—140.
122. Sarig ('Sergei') to Palmah HQ, 11 June 1948, IDFA 957/1951—59.
123. Negev Brigade HQ to 8th Battalion, 'Operational Order No. 1', 16 July 1948, IDFA 5879/1949—22.
124. Later IDF chief of general staff (1968–72) and cabinet minister (1972–77, 1984–92).
125. Aharoni, *Mi-yomano shel muʿamad li-vegida*, pp.108–10. It is unclear when in May or June the episode Aharoni related occurred and how it was connected to the 8th Battalion operations referred to in the

Negev Brigade reports cited above. *Shlimazel* is Yiddish – of which Aharoni was an expert – for 'inept, bungling'.

126. HEMED OC to *Piquʿah va-teqen* (Manpower Division), 7 June 1948, IDFA 6127\1949—108.
127. General Staff/Operations to Air Force/Operations-OC Tel Aviv Airfield, 28 July 1948, IDFA 2315/1950—21. A week or so later, 'Moshe Aharonson' – presumably the same 'Moshe Aharonson' who in later life was a biology professor at Tel Aviv University – was also sent to Dorot 'with a 10-kilogram load' (IDF OC Operations to Air Force Operations/OC Air Force base, 4 August 1948, IDFA 2384/1950—2).
128. Rafi Kotzer, *Bi-zman u-ve-maqom aher* [In a different time and place] (n.p., n.d. [probably 2007]), pp.152–53.
129. Cohen, 'Israel and Chemical/Biological Weapons', p.32. It may be noted that Arab newspapers stopped appearing in Palestine after 23–24 April 1948.
130. Abu Sitta, 'Traces of Poison'.
131. 'Jewish Atrocities in the Holy Land: Memorandum to the United Nations Delegations', p.6.
132. W.S. Carus, *Bioterrorism and Biocrimes: The Illicit Use of Biological Agents since 1900* (Washington, DC: National Defense University, 2001), pp.87–88.
133. According to the Hebrew daily *Ha-Tzofeh* of 28 Jan. 1946, he then returned to Palestine from South America. See also his obituary in the *Washington Post*, 8 Oct. 2002.
134. Yosef Weitz, *Yomani ve-igrotay la-banim* [My diary and letters to my sons] (Ramat-Gan: Masada, 1965), iii, p.344, entry for 26 September 1948.
135. Ben-Gurion, *Yoman ha-Milhama*, 3: 721, entry for 26 September 1948. Reuven Shiloah was the 'advisor for special duties' at the Foreign Ministry, in effect both the coordinator of the country's intelligence services and Ben-Gurion's chief intelligence advisor. In 1951 he was to become the founding director of the Mossad, the Political Department's successor organisation.
136. General Staff/Operations ('in the name of General Yadin') to Moshe Shalovsky, 26 Sept. 1948, IDFA 2384/1950—8.
137. Yadin to Levi Eshkol, 26 Sept. 1948, IDFA 2315/1950—15. In his message to Eshkol, Yadin said that Gibli (and another intelligence officer, Michael Bloch) were travelling to Paris 'in connection with all the immigrants to Israel arriving via Mosul [Iraq] and to track a group of spies… some of whom had reached the country [Israel] who had a wide network abroad'. It is possible that these were among the reasons for Gibli's trip to Paris. But it is possible that *CTB* was the main one.
138. Nir Mann, 'The Testimony of Ambassador Asher Ben-Natan', Yad Tabenkin Archive. The interview took place on 2 March 2008 in Ramat Ha-Sharon. Ben-Natan was a senior and respected government official, who had subsequently served as director-general of the Defence Ministry (1959–65), ambassador to Germany and ambassador to France. What exactly the 'capsule' contained, we do not know.
139. Gamliel to the Shahar, 21 Sept. 1948, IDFA 1096\1983—44.
140. A short, handwritten note headed 'to the Political Department (by Yael)', 25 Jan. 1949, in a *mistaʿarvim* file (IDFA 1096/1983—19). It appears to be the draft by the *mistaʿarvim* squad in Beirut of a response to a Political Department query. In his history of the Arab Platoon, Gamliel Cohen, who led the spy team in the Lebanese capital, refers to requests in Feb.1949 for intelligence on, among other things, 'the water supply network in Beirut and [its] sources' (Cohen, *Ha-mistaʿarvim*, p.279).
141. Unsigned, 'Meeting [of Count Bernadotte, Ralph Bunche and Paul Mohn] With Nakrashy [sic] Pasha, Prime Minister of Egypt, 10: a.m. 29 May at Cairo', United Nations Archives, S-0616-0004-0018-00001 UC.tif, p.2.
142. Leibowitz-Dar, 'Haydaqim', pp.6–8.
143. On opposition of some US military officers to America's biological warfare program, see Harris, *Factories of Death*, p.158. Admiral Leahy, who recorded a 'spirited discussion of bacteriological warfare' in Roosevelt's cabin on the way to Honolulu in July 1944, reports that he told him: 'Mr. President, this [using germs and poison] would violate every Christian ethic I have ever heard of and all of the known laws of war. It would be an attack on the non-combatant population of the enemy.' The president 'remained non-committal throughout this discussion' (Leahy, *I Was There*, p.512).