AIRCRAFT OF THE ACES: MEN & LEGENDS

ARAB-ISRAELI AIR WARS 1967-82

Ken Woodcock

del prado publishers

OSPREY AVIATION

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Front cover
On 17 October 1973, Israeli Air Force F-4s engaged Syrian Air Force MiG-21s near Tartus. Capt Moshe Melnik and Lt Eliezer Lior in F-4 s/n 147 shot down a SAF MiG-21 with an AIM-9D, and also shared a MiG-21 cannon kill with another F-4 crew – Maj Ashor Snir and Lt Chaim Katz in F-4 s/n 65. Six years later Maj Moshe Melnik in F-15 s/n 663 became the first IAF pilot to shoot down a SAF MiG-21 in June 1979

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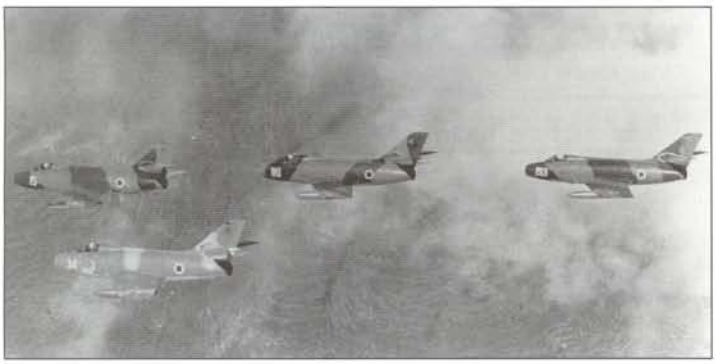
PRESERVING THE STATUS QUO

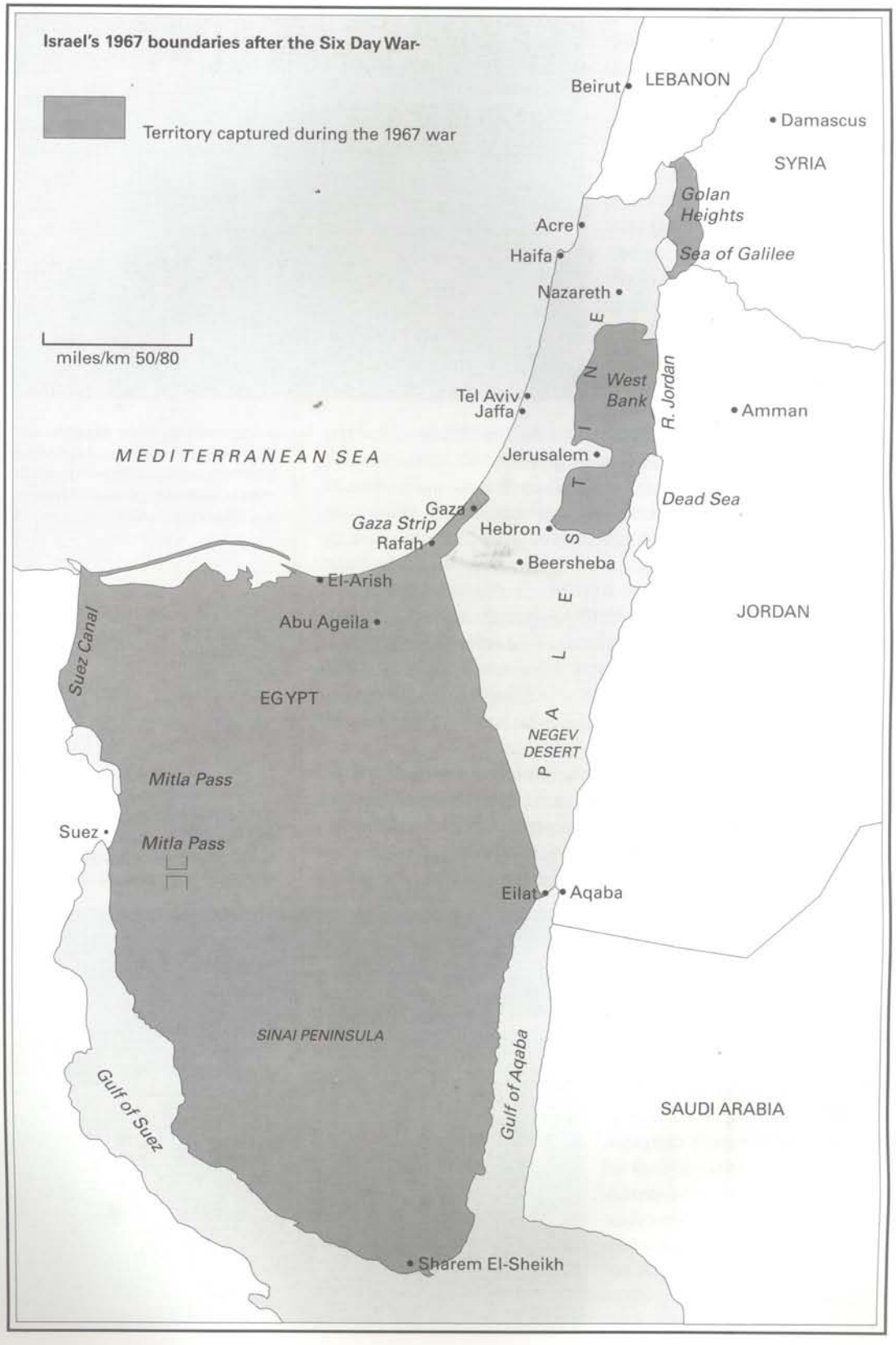
Winning a war does not always yield the results that the victorious nation had hoped for. As has already been observed by the German strategist Carl von Clausewitz, war is a direct descendant of diplomacy. If the political leaders of a nation are not up to the standards of its generals than there should be no surprise when the diplomatic exploitation of the fruits of victory are disappointing. Looking back thirty years later, it looks as if the Israeli leadership lost the initiative once the 1967 Six Day War was over.

June 1967 changed the Middle East completely. Within days Israel was transformed from a small island surrounded by an ocean of hostile Arabs into a local power. On 5 June 1967 the very existence of Israel was at stake. Its borders were long and almost impossible to defend. At its narrowest point Israel was less than 20 miles wide, and the fact that this point was slightly north of Tel Aviv and in the middle of the country invited an



After the Six Day War the Israeli Air Force changed its two-tone camouflage scheme to a lighter three-tone scheme *(IAF)*

The first Israeli Air Force flying course to graduate after the Six Day War on 6 July 1967 was a relatively large course, the start of a major expansion that would double the size of the IAF frontline units within six years. *(Levi collection)*


Israel's 1967 boundaries after the Six Day War
Territory captured during the 1967 war
miles/km 50/80
Beirut
LEBANON
Damascus
SYRIA
Golan Heights
Sea of Galilee
Acre
Haifa
Nazareth
West Bank
R. Jordan
Amman
Tel Aviv
Jaffa
Jerusalem
MEDITERRANEAN SEA
Dead Sea
Gaza
Gaza Strip
Rafah
Hebron
Beersheba
El-Arish
Abu Ageila
Suez Canal
JORDAN
EGYPT
NEGEV DESERT
Mitla Pass
Suez
Mitla Pass
Eilat
Aqaba
SINAI PENINSULA
Gulf of Suez
Gulf of Aqaba
SAUDI ARABIA
Sharem El-Sheikh

aggressor to attempt to cut the nation into two parts. In the north the Syrian army was positioned on the Golan Heights overlooking and dominating the Israelis down in the Chula and Jordan valleys. The Israeli capital Jerusalem was divided, and Tel Aviv, the economic centre of the nation, was only forty miles away from the Egyptian border. Most of the air bases of the Israeli Air Force were within range of the Jordanian artillery.

Israeli Air Force Super Mystère fighters and Fouga Magister trainers at IAI in December 1967. Dozens of IAF aircraft were damaged during the Six Day War *(GPO)*

Six days later, Israel occupied three territories larger than its own area before the war. The Golan Heights had been captured from Syria and the Sinai Peninsula had been captured from Egypt, while the Gaza Strip and the West Bank had been taken over from Egypt and Jordan respectively. Somewhat paradoxically the total length of Israel's borders was now shorter than it had been before the war, and the new borders were much more geographically defined and easier to defend. Moreover, on both the Egyptian and the Syrian fronts, post-Six Day War Israel enjoyed significant buffer-zones measured in hundreds and tens of miles respectively. An aggressor had to penetrate the first Israeli line of defence and then advance either hunderds of miles or tens of miles before reaching Israeli soil. Without air superiority such an offensive could not even be imagined, and if there was one great lesson to be learnt from the Six Day War it was that the Israeli Air Force reigned supreme.

There were, however, drawbacks as well. More than a million Palestinians had come under Israeli control in the Gaza Strip and the West Bank, and their number was to grow steadily. And the Israel Defence Force had to get accustomed to a new reality for which a major expansion of the regular force was required. This was also true for the Israeli Air Force. Having lost some 20% of its fighters during the Six Day War, it had to convert from French to American hardware as a result of a French arms embargo and improved diplomatic relations with the US. Finally, and perhaps most important of all, Israel lost the initiative. Instead of following up the Six Day War with a diplomatic campaign, the Israeli leaders preferred to sit still and try to preserve what they termed the 'Status Quo', the current situation which suited Israel but was unbearable to its Arab neighbours.

The Israeli Prime Minister Levy Eshkol inaugurates the first A-4 in December 1967 *(IAF)*

The vital importance of a diplomatic initiative, a fact which Israel

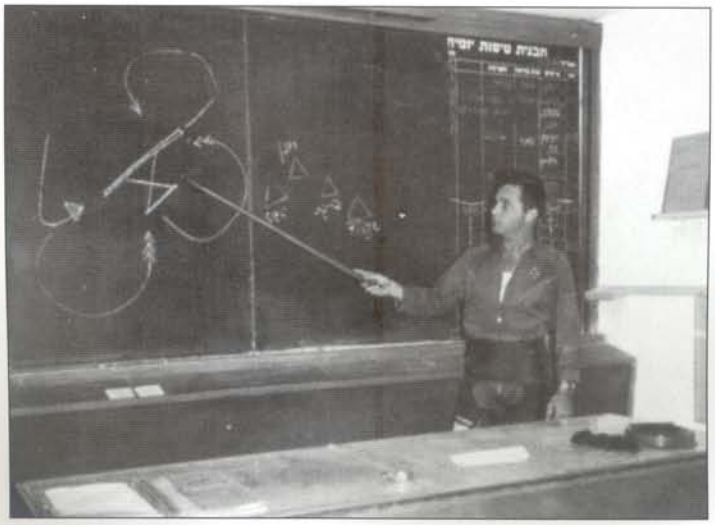
The Israeli Air Force Alouette light helicopter was extremely useful for border patrol. The excellent visibility offered the opportunity to look even for footprints on the sand *(GPO)*

failed to understand, was seized upon by Egypt and by its President, Gamal Abdel Nasser. Although Egypt clearly lost the Six Day War it was not willing to admit defeat nor to lose the leadership of the Arab world. 'What has been taken by force will be returned by force' stated President Nasser, and less than a month after the end of the Six Day War hostilities were resumed.

It was July 1967. Egypt was still months and years away from rebuilding its shattered armed forces which had lost so much equipment, human lives, infrastructure assets and prestige, but it already understood the advantages of the Egyptian armed forces over the Israel Defence Force: massive artillery fire, small commando attacks and the ability to withstand a large number of casualties. Hostilities was resumed on 1 July 1967 when an Egyptian commando force attacked an Israel Defence Force patrol on the northern sector of the Suez Canal. Both sides suffered casualties. The Egyptians supported their forces with artillery and the Israelis used the Air Force. As could be expected, the activity on the ground was reflected in the sky above as well. A series of air combats on 8 July, 11 July and 15 July resulted in six kills claimed by Israeli fighter pilots including two who became aces on 15 July: Ran Ronen with the first Rafael Shafrir air-to-air missile (AAM) kill and Asher Snir with a double kill. In return a single Israeli Mirage was lost on 15 July.

Egypt did not win this first series of battles, but it did not feel that it lost them either. It was only a matter of learning the lessons, preparing for the next time and waiting for the next opportunity. It came on 21 October when Egyptian fast missile boats sank the Israeli Navy flagship *Eilat* with several salvos of Styx surface-to-surface missiles (SSMs). 47 sailors were lost with the destroyer while another 152, 91 of them injured, were rescued by S-58 and Super Frelon helicopters. It was a major blow to Israeli prestige, especially in the light of the results of the Six Day War, and Israel retaliated furiously with a massive artillery attack on the oil refineries of Suez City. The Egyptian front along the 100 miles of the Suez Canal were subdued for almost a year, but meanwhile two types of hostile activity emerged along the Israeli-Jordanian border: artillery shelling, especially by Iraqi artillery in the Bet Shean Valley area, and the incursion of small

Seven kills ace Ran Ronen commanded Israeli Air Force No. 119 Sqn between 1966 and 1968. He is seen here giving a briefing on 3 March 1968 *(Ronen collection)*



Israeli Air Force No. 119 Sqn pilot Eliezer Prigat claimed his first kill on 15 July 1967 in Mirage 68 ***(Peleg collection)***

bands of Palestine Liberation Organisation (PLO) guerrillas into Israel. The Israeli Air Force first operated on the Jordanian border on 21 November 1967 and since then the service has had to divide its resources between two fronts. Especially active along the Jordanian border were Israeli Air Force helicopters, initally the S-58 and then the Bell 205, used for the pursuit of PLO bands in co-operation with ground forces, a classic man-hunt.

A futile attempt to put an end to PLO activity on the Jordanian border was Operation Tofet (Hell), a major Israel Defence Force offensive in the area of Karameh intended to destroy the PLO base of operations. Supported heavily by Israeli Air Force attack aircraft and assault helicopters, the ground forces failed to yield the expected achievements and even had to leave behind several abandoned Centurion main battle tanks. The Israeli Air Force suffered losses as well; a Super Mystère was shot down by anti-aircraft fire on 29 March 1968 while attacking artillery opposite the Bet Shean Valley.

The standard Israeli Air Force medium helicopter immediately after the Six Day War was the S-58.It was used extensively in pursuit of PLO bands along the Jordanian border until replaced by the Bell 205 ***(GPO)***

On the Suez Canal front the Egyptian army was finally ready to demonstrate its superior artillery. Massive barrages of artillery fire on 8 September and 26 October resulted in ten and fifteen dead Israel

Gradually taking-over from the S-58 as the Israeli Air Force standard medium utility helicopter, the first AB 205 helicopters arrived in Israel in December 1967, while later deliveries also included Bell 205s *(Peleg collection)*

Defence Force servicemen respectiveley. The Israel Defence Force launched a comprehensive effort to rebuild its strongpoints along the Suez Canal to be able to withstand artillery fire, but it was clear that such passive action was not enough. On the evening of 31 October Israeli Air Force Super Frelon helicopters flew deep into Upper Egypt to damage a bridge, a dam and a transformer station in a daring commando raid that shocked Egypt and disrupted its planning. The Israeli Super Frelons demonstrated to the Egyptian leadership that local artillery superiority along the Suez Canal was not enough to wage war: Israel was not commited to the Egyptian rules of engagement. The 31 October 1968 action showed that Egypt had its own weaknesses too and that Israel was ready to exploit them to the full.

Although the Suez Canal front became relatively quiet for more than four months while Egypt was preparing its reply to the new Israeli challenge, the Jordanian front was still very active. Israeli Air Force Bell 205 helicopters were used on the evening of 1 December to destroy an Amman-Aqaba railway bridge and an Amman-Aqaba road bridge in a commando raid that was aimed at the Jordanian leadership in a futile attempt to show that the economic price of waging war can be unbearable. Four days later an Israeli Super Mystère was lost over Jordan during a massive Israeli Air Force air strike on the Iraqi expeditionary force opposite the Bet Shean Valley. While on 10 December the only air-to-air kill claimed by the Israeli Air Force during 1968 was achieved when an Egyptian Air Force MiG-17 was shot down by Oded Marom, IAF No. 101 Squadron commander.

Two Syrian Air Force MiG-17s landed in error in Israel on 12 August 1968 and Israeli Air Force pilots evaluated one of these in flight *(IAF)*

A dozen Super Frelons were purchased from France and delivered to the Israeli Air Force between 1966 and 1969. The Super Frelons were the backbone of Israel Defence Force special operations in 1968-69 ***(GPO)***

Yet one more Arab nation was to suffer from an Israeli commando raid when both the Bell 205s and the Super Frelons co-operated on the evening of 28 December to hit Beirut international airport. In retaliation against Arab sponsored Palestinian air piracy and the hijacking of airliners, an Israeli commando force blew up thirteen Arab airliners. Once again Israel demonstrated its ability to strike hard and exert painful losses in a single concentrated action, while the Arabs relied on the cumulative effect of their many small actions. With the Egyptian border still relatively quiet Israel felt confident enough to strike hard at Syria on 24 February 1969 in retaliation against uneasiness that had developed along the border earlier in the year. The Israeli Air Force attacked PLO camps in Syria, and the Syrian Air Force had no option but to scramble its interceptors. By the end of the day a single Syrian MiG-17 and a single Syrian MiG-21 had been shot down by Israeli Mirages.

Chief of Staff Chaim Bar-Lev being baptised by Israeli Air Force ground crews after his solo in a No. 100 Sqn Piaggio P.149 in 1968 ***(Kaspit collection)***

1969-73 THE ATTRITION WAR AND AFTER

Egypt was finally ready to resume hostilities along the Suez Canal on 8 March 1969 with a massive artillery attack. Though it was definitely not known at the time, this was the first day of the Attrition War, a long static war along the Suez Canal that lasted until August 1970. Although an Israeli Air Force Mirage pilot managed to shoot down an Egyptian Air Force MiG-21 on 8 March, the next day an Israeli Dornier 27 observation aircraft was shot down by an Egyptian SA-2.

The first phase of the Attrition War lasted until July 1969 and during this stage the Israeli Air Force attack force was not used on the Egyptian front mainly due to fear of escalation. Attacks on Jordan continued throughout that period and on 22 April 1969 an Israeli Vautour was lost when a Jordanian radar station that monitored Israeli Air Force activity was attacked. Israeli heliborne commando raids into Egypt also continued and inflicted material damage, although it was really a question of prestige with no real effect on the frontline where Egypt still had the upper hand.

In the air however the Israeli Air Force still reigned supreme, with five air-to-air kills in April and May. The last of these was a second kill for the Rafael Shafrir AAM. Israel decided to exploit this advantage to the full in a show of force that began in mid-June and lasted until early July. Four Israeli Air Force Mirages made a low-level supersonic boom over the Egyptian capital Cairo on 17 June 1969, an action that resulted in both the commander of the Egyptian Air Force and the commander of the recently formed Egyptian Air Defence Force being dismissed. A week after the supersonic boom the Israeli Air Force launched an air-to-air campaign in an isolated area south of Suez City. With Israeli Mirages flying at will over Egyptian soil the Egyptian Air Force had no option but to scramble its interceptors with the inevitable result: ten Egyptian MiG-21s were lost by 7 July, one of these being the first victim of the new Rafael Shafrir 2 AAM. In a completely unrelated action, the next day Israeli Mirages shot down seven Syrian Air Force MiG-21s including two claimed by Giora Furman, at the time the Hatzor Flying Squadron commander. Furman recalled:

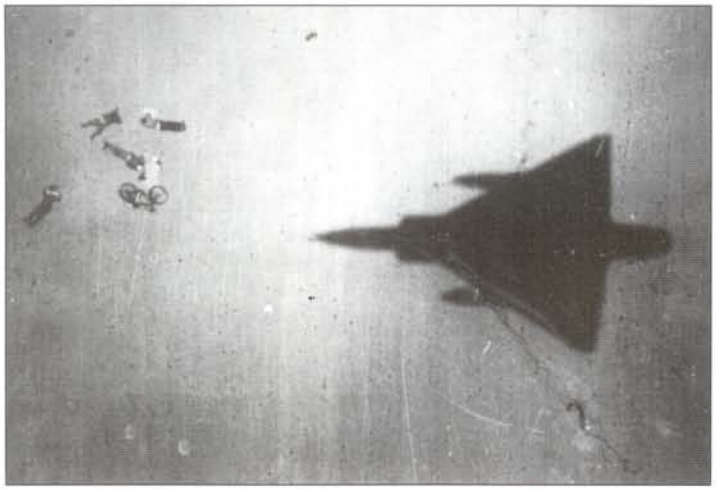
The Israeli Air Force used its Dornier Do 27 observation aircraft for artillery spotting and two were lost to SAMs in 1969: the first to an Egyptian SA-2 and the second to a 'friendly' Hawk *(GPO)*

Israeli Air Force No. 119 Sqn pilot Ran Ronen was credited with his sixth kill on 21 May 1969 ***(Rozen collection)***

One of the most famous scenes of the Attrition War is this low flying Israeli Air Force reconnaissance Mirage on a mission to verify the success of an Israel Defence Force commando force to cut an electricity line deep into Egypt ***(Nir collection)***

'When Yak (Col Ya'acov Nevo, the Hatzor air base commander) was abroad I organized for myself a good mission and caught two MiG-21s over Damascus... Ben-Eliyahu (Capt Eitan) was Number 2 and we were joined by a pair from another squadron which was led by (Maj) Ran Goren. We shot down seven MiG-21s out of eight. I could have shot down a third and a fourth since the (Syrian) MiG-17s started their (usual defensive) circling over Damascus. I could have taken them one by one. I dived at one of them but Eitan Ben-Eliyahu screamed that I was entering a sandwich so I did not want to take a chance and I pulled up. By then our time was over and Moti (Maj Gen Mordechai Hod) ordered us to disengage! My film showed one of the few instances in which the radar was used in combat, with Eitan shouting in the background – he was excited. Pilots who did not use the radar got as close as 200m and even less. This kill was with the radar and from 400-500m, a classic. We used that film for years to explain to pilots that a kill with a radar lock was possible. You had to be patient and pilots usually got excited when they entered air combat with a fluctuating radar lock, so there were switches on the stick which fixed the ranges and indeed most of the kills were from short ranges.'

Though the air-to-air campaign was a great success for the Israeli Air Force it actually had no effect on the Suez Canal front, on the contrary. The Egyptians concluded correctly that Israel was under great pressure and their action along the Suez Canal was intensified with efficient artillery fire, annoying sniper activity and deadly commando raids. In July 1969 the Israel Defence Force lost 29 soldiers dead on the Suez Canal front including seven in a single Egyptian commando raid on 12 July. It was time to involve the Israeli Air Force directly in the fighting and, with the attention of the world focused on the moon, Israel had the perfect opportunity to launch a massive aerial attack along the Suez Canal. On the day that the US astronaut Neil Armstrong stepped on the moon, 20 July 1969, Israel sent its Air Force to the Suez Canal. As could have been expected, the massive Israeli air strike generated intensive Egyptian Air Force activity. In air combats two Israeli Mirages were lost as well as one Egyptian MiG-21 and two Egyptian MiG-17s, while a third MiG-17 was shot down by 40-mm anti-aircraft fire and a single Egyptian Su-7 was shot down by a Hawk surface-to-air missile (SAM). On that day, Aryeh



Israeli Air Force Mirage pilot Eitan Ben-Eliyahu claimed his first kill on 8 July 1969 in Mirage 33 *(IAF)*

Dagan, a reserve A-4 pilot, attacked an Egyptian 57-mm anti-aircraft battery at Port Fuad. He later recalled:

'The neutralization of the battery was planned to allow another four-ship formation from the squadron to attack the SA-2 battery at Gamil. We taxied, took-off and flew at low altitude in radio silence carrying napalm bombs that did not require a pull-up but only a low level pass with reduced chances of early detection. As the landscape changed from desert dunes to salt swamps we changed to line astern in pairs and set course to attack at full throttle with the aircraft accelerating to the maximum speed. I was concentrating on flying the aircraft and looking forward to identifying the target as soon as possible. The port and the city appeared on the horizon and the leader who identified the target broke the radio silence. I then clearly identified the battery with several vehicles and a cannon barrel in position. A long press on the switch and I clearly felt the separation of the bombs from the aircraft. I did not even bank to observe my hits when I felt a bump in the back of the aircraft. Was I hit? The stick responded normally and the indicators did not reveal a thing. I crossed the Canal to the west and during the turn back my wingman said, "You have a fire in your left wing root". At that moment the hydraulic pressure warning lights came to life. Control was normal, the engine responded, the pressure gauge was on zero and my wingman kept telling me that the fire was spreading. The fire warning light then came on. With my heart beating faster than usual I considered for the first time the option of ejection. The altitude was convenient but not the swamp down below! A burning aircraft means an immediate ejection, this was how we were trained. But the fear of ejection over the swamp coupled with a report from my wingman that the fire was out resulted in the rejection of ejection thoughts. I set course to the nearest air base, El Arish, climbed and examined the instruments. It looked like a hydraulic fluid reservoir had been hit and the fluid had caught fire but no other systems were damaged. To ensure radio communication I operated the emergency generator. I felt comfortable and reported to the controller. As we approached El Arish I lowered the undercarriage, but the starboard wheel indicator did not show that the leg was locked so I asked my wingman to come closer and check. His observation was positive so I decided to continue to Hatzerim where proper mainte-

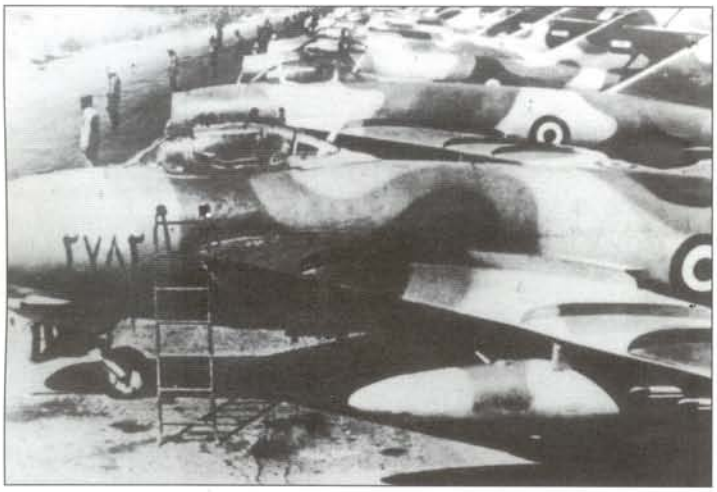
Israeli Air Force No. 101 Sqn Mirage pilots in July 1969. Standing (left to right: Peri, Golan, Marom, Sela, Levi, Sharon, Hertz, Shochat and Epstein. Sitting (left to right): Parnas, Shachar, Eitan, Ben-Eliyahu, Ben-Nun, Gordon and Baharav *(Levi collection)*

Israeli Air Force No 116 Sqn Mystère pilots in July 1969. Standing (left to right): Shachar, Zamir, Shapira, Sa'ar, Salmon and Sela. Sitting (left to right): Erez, Ofer, Shadmi, Yahalom and Livni *(Livni collection)*

nance services were available. I was bothered by the starboard wheel indicator so I did a touch-and-go and landed on my second approach. I immediately understood that I had no brakes and that staying on the runway was impossible. The aircraft slowly drifted to the right. I switched off the engine and the aircraft slid off the runway, rolling slowly along the ground until it stopped. I quickly opened the canopy, released myself and cleared out of the area. I waited but there was no rescue vehicle or fire engine in sight. So I returned to the aircraft and examined the damage – which seemed to be extensive – until finally a rescue vehicle arrived.'

The Israeli Air Force operation continued until 28 July and once again they managed to scale down hostilities. When Egyptian activity intensified once again the Israeli Air Force launched (on 13 August 1969) another campaign that lasted for six days. On the last day an Israeli A-4 was shot down by anti-aircraft fire and the pilot, squadron commander Nissim Ashkenazi, became a prisoner of war (PoW). During that phase of operations in July-August 1969 the Israeli Air Force was used much like 'flying artillery', feeling the gap between the capabilities of the Israel Defence Force artillery and the Egyptian artillery. Another development in the use of air power during the war came on 9 September 1969 and lasted until the end of the year. Unable to deter Egypt from pressing-on with the Attrition War, Israel decided on an anti-attrition campaign in order to inflict such heavy losses that Egypt would not continue with the Attrition War and would seek a ceasefire. The campaign was limited to the immediate area to the west of the Suez Canal and down south on the west bank of the Gulf of Suez. The first phase was to achieve total air supremacy over that area by the destruction of the anti-aircraft positions, SAM sites and radar stations. By Israel achieving total air supremacy Egypt would be denied the option of following up the static nature of the Attrition War with an offensive across the Suez Canal, while the heavy losses that would be incurred on the Egyptian armed-forces, both in material and in human life, might drive the Egyptian leadership to end the war. In other words Israel was now using the attrition strategy to force Egypt to abandon the same strategy!

Despite its age the MiG-17 was an efficient short-range attack aircraft with respectable air-to-air capability at low altitude *(Nicolle collection)*



The first Israeli Air Force unit to operate the A-4H Skyhawk was No. 109 Sqn which commenced operations on the type in 1968 ***(Ben-Shachar collection)***

While the Egyptian primary weapons of attrition were the artillery, the snipers and the commandos, Israel's primary weapon of attrition was the Israeli Air Force, although heliborne commando raids were used as well. The Israeli campaign began on 9 September when an Israel Defence Force armoured force (using Soviet main battle tanks and armoured fighting vehicles that had been captured in the Six Day War) was ferried from Sinai across the Gulf of Suez by the Israeli Navy. Landing near El Hafair the force advanced south some 30 miles along the coast road destroying anything it encountered en route. The Egyptians lost some 150 dead including a Soviet General, while the Israeli Air Force heavily supporting the Defence Force, lost an A-4. Its pilot, squadron deputy commander Hagai Ronen, was posted missing in action. President Nasser suffered a heart attack, the Egyptian Chief of Staff was dismissed and the Egyptian Air Force attempted to retaliate on 11 September with a massive air attack on Israel Defence Force installations in Sinai. A single Egyptian MiG-17 was shot down by 20-mm and 40-mm anti-aircraft fire, while in air combats an Israeli Mirage was shot down as were five Egyptian MiG-21s and two Su-7s. On that day, Israeli Air Force Mirage pilot Yehuda Koren claimed his fourth kill. He later recalled:

No. 116 Sqn was the only Israeli Air Force unit to operate the Mystère between 1968 and 1971 ***(Livni collection)***

'I was scrambled to intercept attacking Su-7s but the controller gave me an altitude of 20,000ft. (Giora) Epstein was also involved and he corrected the controller. "You are going after the MiGs at high altitude, I am going after the Sukhois at low altitude". Avsha (Avshalom) Friedman was my wingman and we entered a combat versus six MiG-21s. At one point a pair reversed so I stayed with a four-ship formation. Avsha went after the pair and very quickly shot one of them down. I was in a left turn and

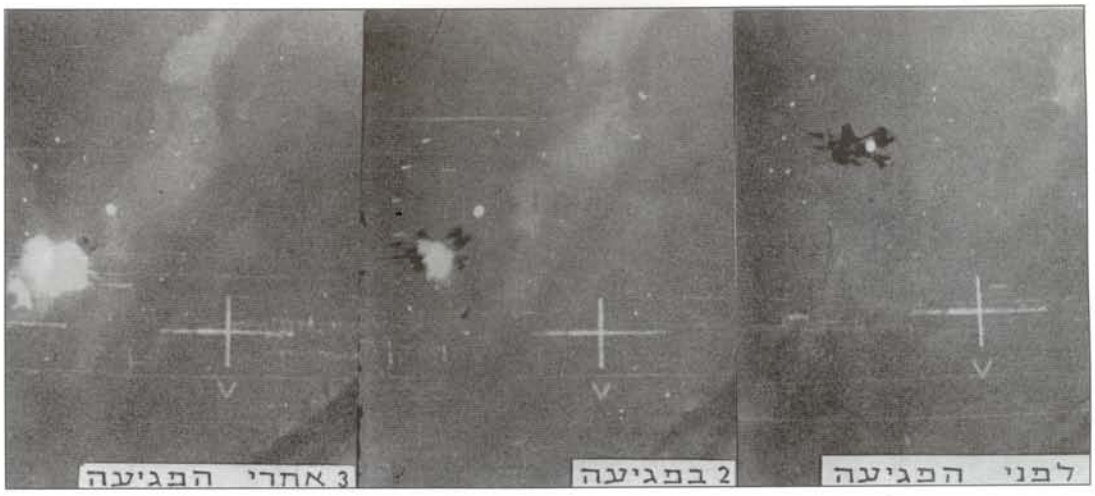
The Americanization of the Israeli Air Force also resulted in the re-engining of the French Super Mystère with a US J58 turbojet *(Shapira collection)*

the moment one of them blew up the rest started to escape. The aircraft that I was after levelled its wings so I launched a Shafrir 2. Then Avsha shouted, "break". I broke hard and I was sure that the missile missed. The aircraft on my tail passed me so I reversed and saw an aircraft explode. It was my missile. The combat was pretty tough. The MiGs fired at us from any angle; their chances to score were slim but they shot anyway. In training missions when you saw an aircraft at such an angle you ignored it, but here you ignored an aircraft yet he shot at you anyway and the tracers flew by. There was even a pair that shot at me in a head-on situation!'

The Israeli Air Force offensive was tactically successful. The Egyptian air defence assets were destroyed, air superiority was achieved and many Egyptian targets along the Suez Canal were attacked on a daily basis. The new Israeli Air Force multi-role top fighter, the F-4E Phantom, made its first operational attack mission on 22 October when a SA-2 battery at Abu Sueir was attacked, while on 4 November two F-4s performed a low-level supersonic boom over Cairo to remind the Egyptian citizens and leadership that the Israeli Air Force possessed total air superiority. From time to time Egyptian fighters challenged Israeli air supremacy, and on 11 November the F-4 was credited with its first air-to-air kill in Israeli Air Force service. Action along the Jordanian and Syrian borders continued in parallel with intensified activity on the Egyptian front. On 17 November an Israeli F-4 was shot down by Jordanian anti-aircraft fire, while on 11 December Israeli Mirages shot down one Syrian MiG-21 and two Syrian MiG-17s.

The first F-4Es arrived in Israel in September 1969 and were operational the next month. Deliveries continued throughout the Attrition War and beyond although used by the US Administration as a diplomatic tool to impose its will on Israel *(Peleg collection)*

Despite the tactical success of the



Israeli Air Force No. 101 Sqn pilot Menachem Sharon was credited with his first kill, an Egyptian Air Force MiG-21, on 11 November 1969 ***(Sharon collection)***

Israeli Air Force offensive, the Israeli strategic objective of forcing Egypt to cease hostilities along the Suez Canal was not achieved. Although Egypt was certainly suffering from the new Israeli attrition campaign, it was not yet willing to succumb to Israeli pressure. The Israeli Air Force primary targets were air defence assets, artillery positions, headquarters, civil and military infrastructure and battlefield air interdictions (BAIs) against traffic mainly at night. The activity of the Egyptian artillery was scaled down, but instead the Egytian army used light arms and mortars so that the number of Israel Defence Force casualties along the Suez Canal was not reduced. Even the achievement of air superiority was not clear cut and the Egyptian Air Defence Force continued to fight the Israeli Air Force with attacks on SA-2 batteries continuing well into December 1969. An Israeli Mirage was extensively damaged by SA-2 on 24 December and was only returned to its base through skilful flying by its pilot.

Nevertheless Israeli pressure was starting to yield results. A major success came on the evening of 26 December when three Super Frelons

The arrival of the first Sikorsky S-65 helicopters in late 1969 enhanced the heavy-lift capability of the Israeli Air Force rotary wing fleet ***(IAF)***

Israeli Air Force Nord Noratlas transports were used *as nocturnal* bombers at least twice during 1969 *(IAF)*

landed Israeli troops close to an Egyptian P-12 radar station. The troops captured the site, and two newly arrived Sikorsky S-65 helicopters came in and lifted the two component containers across the Gulf of Suez to Sinai. The general impression was that with a little bit of additional military pressure Egypt would come to the conclusion that continued attrition was no loger feasible. The idea was to escalate the conflict by hitting high-value military targets deep into Egypt. Up until the end of 1969 Israel used its heliborne forces to hit pinpoint targets deep into Egypt but this special operations tactic was not well-suited to sustained operations and continued pressure. The Israeli Air Force even used its Noratlas transports to bomb bridges deep into Egypt, but while the first such mission on 29 April 1969 had been a relative success, the last mission on 24 October almost ended in disaster when two of the transports were damaged by anti-aircraft fire. By the end of 1969 the Israeli Air Force finally had the weapon with which it could sustain a continued campaign to hit high-value targets deep into Egypt: the F-4 fighter-bomber.

Soviet Intervention

The first Israeli Air Force deep penetration attack mission was launched on 7 January 1970 when three targets were attacked: a commando headquarters at Inchas, a SAM training and logistics site at Dahashur and the Tel El-Kabir barracks. Additional targets attacked during January included a logistics site, an ammunition factory, a divisional headquarters, an engineering workshop, an armoured corps headquarters and several barracks and training camps. The other Israeli Air Force components were not idle either. The offensive campaign along the Suez Canal continued. An Egyptian MiG-21 was shot down by a Mirage pilot on 4 January, and heliborne forces raided Shadowan Island in the Gulf of Suez on 22 January and captured it for 24 hours. The Israeli Air Force supported the Defence Force on Shadowan Island and A-4s even sank two Egyptian torpedo boats. But the operation turned out to be a Trojan Horse when a truck loaded with mines captured at Shadowan exploded as it was being unloaded from a landing craft at Eilat port. More than forty were killed and more than sixty injured.

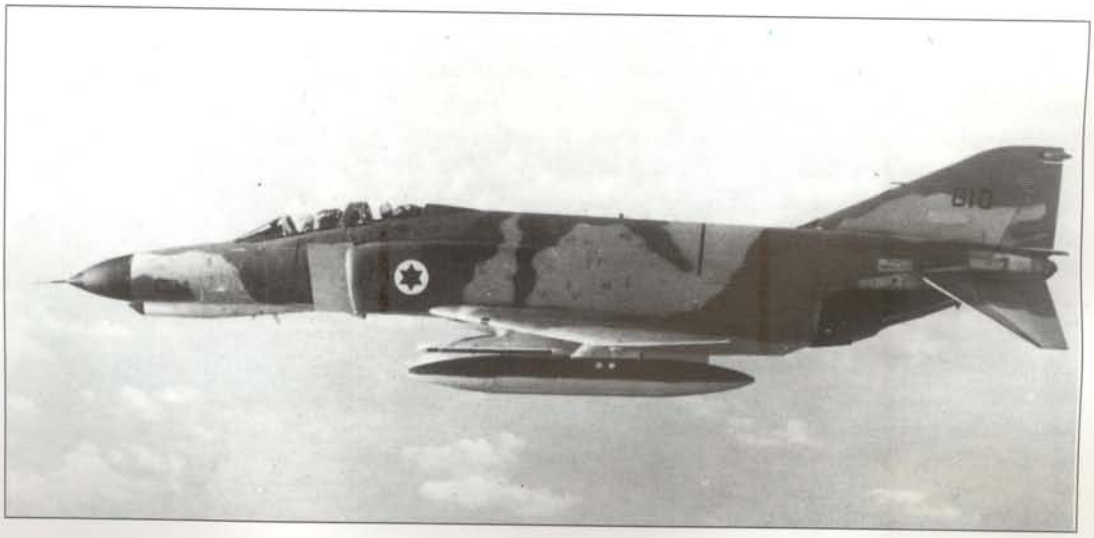
The Attrition War was at a crossroads and Israeli pressure forced Egypt

to reassess the situation, but the outcome was not the decision for which Israel hoped. Egypt was not yet willing to abandon its initiative and end hostilities. Instead, President Nasser made a two day visit to Moscow on 24-25 January 1970 that had a dramatic effect on the conflict. Egypt had found the ultimate answer to the Israeli Air Force deep penetration strikes: direct Soviet intervention in the war.

Some 1,500 Soviet advisors were already present within the Egyptian armed forces from regiment sized units upwards, and several had been killed in the war, but in early 1970 a complete Soviet Air Defence Division, including an integral MiG-21 equipped interception air brigade, began its deployment to Egypt. Equipped with anti-aircraft artillery, radar stations, command and control facilities and the latest versions of the SA-2 and the SA-3 SAM systems (the latter never before operated in the Middle East), the Soviet Air Defence Divison assumed responsibility for the defence of Alexandria, Cairo and the Aswan Dam thus freeing the Eyptian Air Defence Force to engage the Israeli Air Force in the battle that was still waging for air superiority west of the Suez Canal.

While the Soviet Air Defence Division was being deployed, Israeli Air Force deep penetration attacks took place throughout February and March. At first it looked as if the new Israeli Air Force offensive tactic was bringing positive results. In fact the routine activity and training of the Egyptian armed forces was almost halted, but Israel was not yet aware of the impending confrontation with the Soviets. A major set-back in the Israeli Air Force campaign came on 12 February when a civilian steel plant at Abu Za'abal was bombed in error instead of a SAM storage site at Dahashur. Some 70 Egyptian workers were killed and another 100 were injured and, although Israel warned Egypt about the presence of a delayed-fuse bomb, it was a major propaganda coup for Egypt, as well as being a tragic incident. No less tragic was another error in a deep penteration attack mission on 8 April 1970 when a school was bombed instead of the assigned military target at El Tsalchiya, in which 47 children and staff were killed and about 30 injured. By this time the Israeli Air Force deep penetration attack campaign was winding down in scale, not because of those tragic errors but because of the Soviet presence.

The deep penetration missions exerted the most out of the new Israeli Air Force F-4E fighter-bombers ***(Ben-Shachar collection)***



Israeli Air Force pilot Oded Marom was credited with the first IAF kill in 1970 while flying Mirage 59. It is seen here with ten kill markings on 16 July although its actual score on that date was eleven kills *(GPO)*

By late February the deployment of the Soviet Air Defence Division to Egypt was noticed by Israel. The Israeli Air Force commander, Maj Gen Mordechai Hod, advised the Israel Defence Force Chief of Staff to attack a single Soviet SAM battery as a warning sign, but his proposal was not accepted. Instead, during March the Israeli Air Force started to avoid Soviet areas of responsibility in order to avoid a direct confrontation. Beginning on 1 March they concentrated mainly on efforts to preserve Israel's air superiority over the west bank of the Suez Canal, and special attention was given to attacking many T-shaped trenches which the Egyptians were preparing. Unknown to the Israeli Air Force these were the first signs of the rolling forward of the Soviet Air Defence Division; the trenches were being prepared for the new SA-3 system.

The Israeli Air Force deep penetration strikes were discontinued on 13 April, and five days later Soviet flown fighters almost intercepted two Israeli F-4s on a reconnaissance mission (interestingly Israel received its first RF-4E reconnaissance aircraft only in 1971). The fact that the units involved were Soviet was easily confirmed by monitoring the radio/telephone communication since the Soviet pilots and their command and control facilities spoke Russian.

The presence of the Soviet Air Defence Division also gave more confidence to the Egyptians. Egypt increased its activity level both with offensive strikes on Israel Defence Force targets in Sinai and with attempts to intercept attacking Israeli aircraft. On 25 April two Egyptian Il-28s that had penetrated deep into Sinai under the cover of darkness were both shot down while returning home from their bombing missions. One was hit by an F-4 crew and the other by a Mirage pilot, Amos Amir, who flew dressed in T-shirt, shorts and sandals since he was sure that the F-4s with

An Egyptian SA-2 system that had been captured during the Six Day War. It was still a viable and deadly weapon in 1970 ***(Niv collection)***

their superior all-weather interception capability would do the job and that he would not be scrambled.

Two Egyptian Su-7s were shot down by Israeli Mirages on 28 April during an attack mission, but during May the Israeli Air Force was starting to succumb to the overwhelming determination of the Egyptians to roll forward the air defence network and deprive the Israeli Air Force of its air superiority over the west bank of the Suez Canal. Although Israeli fighters were still successful in the air-to-air arena, the real war was by then between the Israeli attack aircraft and the Egyptian Air Defence Force supported in the rear by the Soviet Air Defence Division. Between 14 May and 27 July Israeli fighters claimed a single Egyptian Mi-4 helicopter, five Egyptian MiG-17s and twelve Egyptian MiG-21s for no air-to-air losses. While on the Syrian border the result was not that clear with five Syrian MiG-17s (including two shot down by an A-4) and four MiG-21s shot down, in return for one Israeli F-4 and one Mirage beween 2 April and 26 June.

Israel Baharav, one of the most successful Israeli aces, recalled an air combat versus Egyptian MiG-21s on 10 July 1970:

'I was a leader but when a team was organized I flew as Number 4. We came as a team to shoot down MiGs. (Iftach) Spector was the leader; the senior deputy commander, Menachem Sharon, was Number 3; (Moshe) Hertz was Number 2 and I was Number 4. We joined up with Sa'ars (improved Dassault Super Mystère B.2s) and came in with them during their bombing runs. Each one of us stayed close to a Sa'ar because the Egyptians were already familiar with all of our deceptions. They only tried to intercept our attack aircraft hence our purpose was to surprise them so that the next time they would be more careful.

When the MiGs arrived we sent the Sa'ars home. We flew west and rapidly closed the distance, but it turned out that we were chasing their external fuel tanks. They recognized the ruse and disengaged, but they also prepared an ambush for us, a four-ship formation at low altitude. They were as good as we were, their control was 100%.

We all saw a pair of MiG-21s pulling-up after Number 1 and Number 2. I knew that this would not end there. Another pair, and maybe more, was surely behind. Spector and Hertz started to fight the first pair. Menachem Sharon watched them and I searched for the additional MiGs. Suddenly I saw

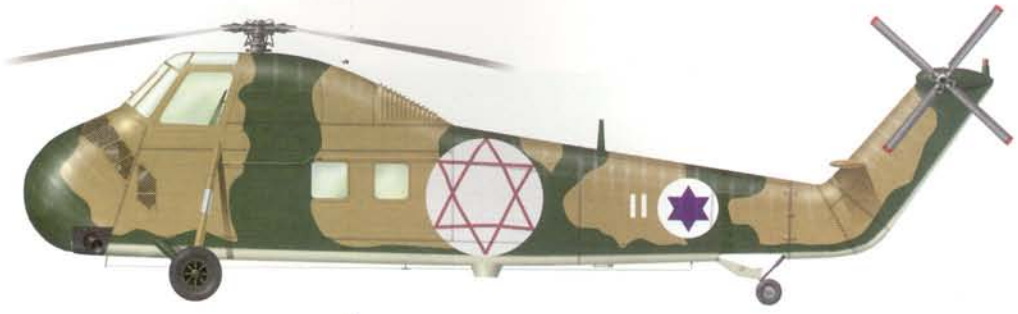
Although used primarily in the Operational Training Unit role by the Israeli Air Force No. 113 Sqn, the Ouragan also flew operationally throughout the Attrition War mostly on the Jordanian front since the Egyptian integrated air defence network was too dangerous to the veteran French fighter ***(Peleg collection)***

The successful Israeli Air Force F-4 strikes were hampered by the Soviet intervention and by two tragic bombing errors that cost the lives of many Egyptian civilians *(IAF)*

another pair coming in after us. I reported, "Number 3, there is another pair coming in after us, I am turning right into them". Sharon said, "Negative, stay with me, the target is straight ahead". Spector heard and he knew that I had the reputation of an undisciplined pilot. "Number 4, stay with Number 3!" I had no choice. I saw and understood that I was the only one to see, so I said, "Number 3, I've left you to the right and up, pull-up and join me!" I took the lead: not, "I am doing it" but, "I've done it". I was so confident and my spoken instruction was so clear that he simply flew to me. An air combat followed, Spector and Hertz with their pair and Sharon and I with ours.

The Soviet presence prompted the Egyptian Air Force to increase its offensive activity. The low flying Egyptian MiG-17s and Su-7s posed a major challenge to the Israeli Air Force interceptors *(Nicolle collection)*

Colour Plates



Sikorsky S-58 s/n 11

One of the first three S-58B helicopters that arrived in Israel in 1958. A fourth followed in 1959 and a further three in 1960, while 22 H-34G-IIIs and 2 SH-34Gs arrived from West Germany in 1962-63. The initial batch purchased in the USA was the civil model because the US Administration was not yet willing to sell Isreael any weapons. The larger batch received from West Germany were all of the military version, although all these helicopters were known in Israeli service simply as 'Sikorsky 58s'.

Dassault Mirage IIICJ s/n 12

Lt Col David Ivry, a 101 Sqn Hatzach pilot, flew his first Six Day War mission in Mirage IIICJ 12 on 5 June 1967 when his wingman Lt Ilan Gonen shot down an Egyptian Air Force Il-14 over Sinai. The red and white striped rudder was reintroduced by 101 Sqn a short while after the Mirage IIICJ entered service, thus renewing the tradition that was introduced in 1948 when Avia S-199 fighters were painted with a red and white striped rudder. The tradition was discontinued when the squadron re-equipped with the Mystère in 1956.

Sa'ar (Storm) upgraded Dassault Super Mystère B.2 s/n 33

Between 1969 and 1972 the Israeli Air Force converted its remaining Dassault Super Mystère B.2 fighters to Sa'ar (Storm) standard, optimising the platform for the air-to-ground role. The heart of the conversion was the replacement of the French Atar 101G afterburning turbojet with the more economical US manufactured Pratt and Whitney J52 engine as used in the A-4H Skyhawk that was by then the primary IAF attack aircraft. Additionally the empennage was redesigned to compensate for Centre of Gravity shift and for the deletion of the convergent/divergent nozzle of the afterburning French powerplant. French systems were replaced with Israeli and US systems and an additional hardpoint was added below each wingroot. The new additional hardpoint was wired to carry the Rafael Shafrir 2 Air-to-Air Missile for self-defence.

IAI Kfir n/s 727

The IAI Kfir entered Israeli Air Force service in mid-1975. Quite soon the initial version of this fighter became known as Kfir Balata (Brick) because of its lack of agility and manoeuverability compared with the previous IAF delta fighters, the Mirage and the Nesher. Two years later the improved canard equipped Kfir C2 entered IAF service and the early Kfirs were passed from squadron to squadron pending delivery of the more capable version. In two separate contracts Israel leased a total of 25 Kfirs to the US Navy and to the US Marine Corps for use in the aggressor role under the US designation F-21A Kfir. The US Marine Corps VFMT-401 squadron operated Kfir 727 as '07' between 1987 and 1989.

McDonnell Douglas F-4E Kurnass (Sledgehammer) s/n 127

The McDonnell Douglas F-4E Phantom, known in Israeli Air Force service as the Kurnass (Sledgehammer), had given the phrase 'a multi-role combat aircraft' a new dimension when it entered Israeli Air Force service in 1969. At first two new squadrons were formed to operate the first batch, while in late 1970 The Bat Squadron became the third IAF unit to operate the Kurnass. F-4E 127 was originally USAF 69-7226, one of the second batch of Phantoms purchased by Israel, and it is currently at the IAF Museum, Hatzerim air base.

McDonnell Douglas A-4E Ahit (Vulture) s/n 215

To accelerate deliveries of the McDonnell Douglas A-4 Skyhawk, Israel purchased ex-US Navy A-4Es in addition to the new-build A-4H model. Thus between 1967 and 1971 the Israeli Air Force converted one squadron from the Mystère to the A-4H, formed two new A-4H squadrons, converted a Sud Aviation Vautour squadron to the A-4E and another Mystère squadron to the A-4E. When A-4N deliveries commenced in 1972 the force was expected to go through a further expansion, but the October 1973 Yom Kippur War interfered. Both the A-4E and A-4H models were brought up to A-4N standard by the insertion of the improved navigation and attack system in the 'hump' behind the cockpit. A-4E 215 has already received the updated avionics package but not the extended nozzle that had been refitted to the IAF Skyhawks in a crash programme during the Yom Kippur War. This was a lesson from Sa'ar operations when it was realised that the extended nozzle of the Sa'ar resulted in the infra-red homing missiles, the greatest threat was the shoulder launched SA-7 Surface-to-Air Missile, exploding further aft than in the case of the A-4. When the warhead of the missile exploded even several feet further away the damage caused to the aircraft's control surfaces by the debris of the explosion was significantly reduced.

McDonnell Douglas F-15A Baz (Buzzard) s/n 654

The first three McDonnell Douglas F-15A Baz (Buzzards) to arrive in Israel in December 1976 were in fact refurbished Research & Development (R&D) airframes. A fourth refurbished R&D example followed soon afterwards while more than a year later deliveries of nineteen F-15A single-seaters and two F-15B two-seaters commenced. F-15A 654 is most likely USAF 76-1505, the first of the nineteen serial production new-build Israeli examples, and it is not a known MiG-killer.

General Dynamics F-16A Netz (Hawk) s/n 254

Considered by many as the true successor to the legendary French Dassault Mirage in Israeli Air Force service, the first four General Dynamics F-16A/B Netz (Hawk) fighters arrived in Israel in July 1980, and by the time of the June 1982 Lebanon War the IAF had three fully operational F-16A/B squadrons. The first IAF F-16A/B squadron was the First Jet Squadron and for a short while the serial number atop the vertical stabiliser of each of the squadron's aircraft was replaced by an individual aircraft name, though the serial number on the side of the air intake was retained. Carrying two kill markings, Netz 254 was named Noga (Venus).

A mixed formation of pre-Six Day War camouflage and post-Six Day War camouflage Vautours of Israeli Air Force No. 110 Sqn (IAF)

The Mirage was originally an interceptor, illustrated here with a Matra R.530 air-to-air missile and two supersonic fuel tanks, but was operated by the Israeli Air Force as a true multi-role combat aircraft *(GPO)*

This Israeli Air Force Mirage 11 was damaged in a take-off accident in October 1969. The pilot was Israel Baharav *(Nir collection)*

Israel Baharav's first kill on 24 October 1973 *(Baharav collection)*

Israel Baharav's second kill on 24 October 1973 *(Baharav collection)*

The Israeli Air Force Super Frelons played a key role in the invasion of Shadowan Island in January 1970 *(IDF Spokesman)*

(Israeli ground crews examine F-16A 107, one of the first four of its kind to arrive in Israel on 2 July 1980. Within two years this aircraft was to create history. It was one of eight Israeli Air Force F-16s that destroyed the Iraqi nuclear reactor in 1981 and it shot down 6.5 Syrian aircraft *(IDF Spokesman)*

The lengthened nozzle was added to the A-4 Skyhawk fleet as an emergency modification during the Yom Kippur War when it was realised that the J52 engined improved Super Mystère suffered less than the A-4 from heat seeking missiles, especially the shoulder launched SA-7 Strela *(IAF)*

An Augusta Bell AB 206A light utility helicopter near Kfar Kok, deep into Lebanon, after the 1982 War. The yellow V was added to all the Israeli Air Force helicopters following a few friendly fire incidents during the war *(Shlomo Aloni)*

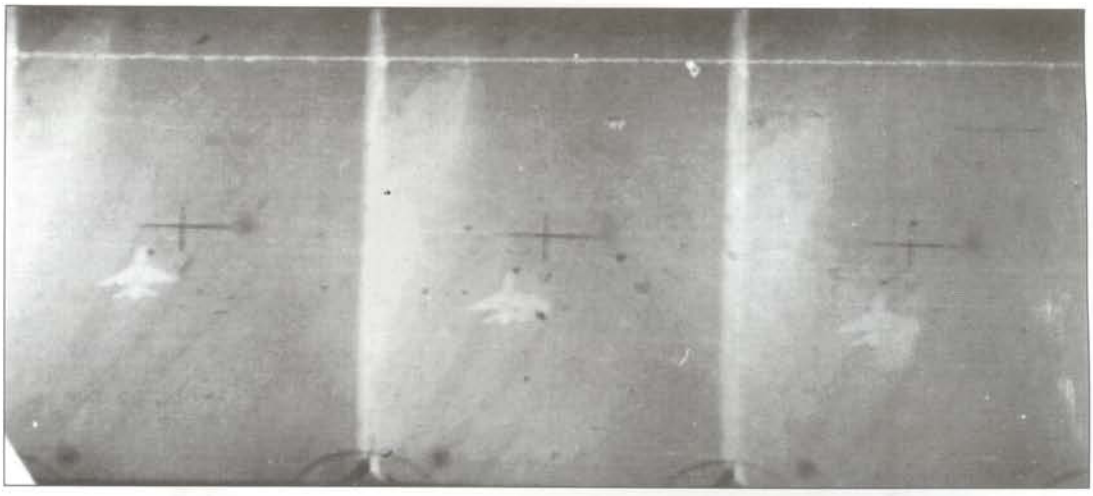
The Israeli Air Force top scorer ever is Mirage 59 that was credited with 13 kills between 1966 and 1973. It might have scored more had it not suffered an unfortunate take-off accident on 7 October 1973 that prevented its participation in the war. After rebuilding by IAI, Mirage 59 continued to serve the IAF until 1982 *(IAF)*

Included with the F-15 in the US arms package promised to Israel as part of the diplomatic efforts after the Yom Kippur War were four Grumman E-3C Hawkeye Airborne Early Warning (AEW) command and control aircraft *(IAF)*

Even in a high technology force like the Israeli Air Force had become in the 1980s there was a place for the small manned observation aircraft, though many of its roles were gradually taken over by the Unmanned Air Vehicle (UAV). The Dornier Do 28 was the standard Israeli Air Force light observation aircraft in the 1970s and 1980s *(IAF)*

Four Israeli Air Force F-15s line-up prior to departure for a training sortie. The F-15 has been ruling the Middle East skies since the late 1970s and quite a number of those delivered between 1976 and 1982 are MiG-killers including F-15B 408 and F-15A 658 and 695 illustrated in this photo *(IAF)*

F-16A 258 has emerged from a recent Israeli Air Force History Branch study as the second highest scoring Israeli F-16 with five kills. For a short while it carried the individual name Romach (Lance) on its vertical stabiliser instead of the serial number *(Lockheed Martin)*



Israeli Air Force No. 101 Sqn Mirage pilot Israel Baharav became an ace with a double kill on 27 March 1970 ***(Baharav collection)***

'I frustrated their attack but they were so fast that they pulled up and I could not reach them. They then tried to dive and disengage. I tried to follow them but I could not get them. Then they pulled up once again and dived. They did it three times. I simply could not catch them, not in the pull up and not during the dive. The third time they entered a steep dive, 60° or so, a crazy supersonic dive, I launched a missile at their Number 1. They flew very close to each other. As the missile exploded their Number 1 rolled over to a split S, 60°, 10,000ft, 1.4 Mach. His wingman rolled after him and I started to roll but I realized that I would not be able to recover. It all happened over Lake Manzala. I decided that it was too dangerous so I rolled back. I could see their Number 2 also roll back but I could no longer see their Number 1. I recovered with my G meter at the maximum, 10G, and at 2,000ft. I lost my generator and alternator and I had to revive the systems. Then I saw the Number 2 MiG recover below me and his leader crash.

'I then started a long chase after the Number 2 MiG with Sharon flying behind me all the time. There were low clouds over the Nile Delta and the MiG flew towards his home at Mansura. I did not want him to disappear

Israeli Air Force No. 119 Sqn commander Amos Amir shot down an Egyptian Il-28 at night on 25 April 1970 in Mirage 58, one of the greatest IAF MiG-killers, seen here carrying eight kill markings in May 1973 ***(GPO)***

Israeli Air Force No. 119 Sqn operations officer Yitzhak Nir was credited with his second kill on 28 April 1970 *(Nir collection)*

into the clouds but my gunsight was not close enough and he started to head for the clouds. They were very low, maybe only 200-300ft above the ground. I lost him so I just fired into the cloud and descended below it with Menachem Sharon, and there was the MiG, burning, with the pilot ejecting close to his home at Mansura. I had fired into the cloud, an extraordinary kill!'

Yet all the air-to-air successes could not offset the fact that the Israeli Air Force was losing the air superiority over the west bank of the Suez Canal. Two Israeli F-4s were shot down by SA-2s on the late afternoon hours of 30 June 1970 with three air crews becoming PoWs, while the fourth, navigator Yair David, was retrieved under the cover of darkness by a S-65 helicopter in a daring rescue mission. The Israeli Air Force continued to attack the air defence nework, but at noon on 5 July a third F-4 was shot down by an SA-2 with both air crew becoming PoWs. The Israel Defence Force Chief of Staff, Major General Chaim Bar-Lev, announced the next day that the Soviets had planned, organized and were operating an air defence network in the central zone of the west bank of the Suez Canal including between ten and fifteen SA-2 batteries and at least two SA-3 batteries. The array was between 15 to 35 miles to the west of the Canal with overlapping coverage, anti-aircraft artillery defence and salvo launchers. The Israeli Air Force claimed that it had destroyed five of the batteries and damaged another two but this was abviously not enough.

The improved Super Mystère received two additional hardpoints and became operational during 1970 *(Ron collection)*

The blunt Soviet intervention put the US under pressure to comply with Israeli requests for the immediate supply of electronic warfare counter-measures to fight the new threat. Electronic Counter Measure (ECM) pods were rushed to Israel and were first used on 18 July after ten days during which the Air

Both the A-4 and the Vautour were extensively used on the Egyptian front *(Peleg collection)*

Defence array was not attacked. It was on that day that the Israeli Air Force was shocked. Flying straight and level at medium altitude to give the new magic ECM pods the best operating conditions, the two F-4 squadron commanders were both hit by SAMs. Samuel Hetz was killed and his navigator Menachem Eini became a PoW. Their F-4 was the first victim of the SA-3 in the Middle East. Avihu Ben-Nun, the other F-4 squadron commander, managed to nurse his badly damaged aircraft to an emergency landing at Refidim in Sinai. The hopes that the ECM pods would do the job were shattered and although the war lasted for another three weeks it was clear from that moment that the Israeli Air Force had no operational answer to the new threat from the ground by massive numbers of overlapping SAM sites defended by anti-aircraft artillery and backed by an extensive early warning, command and control network.

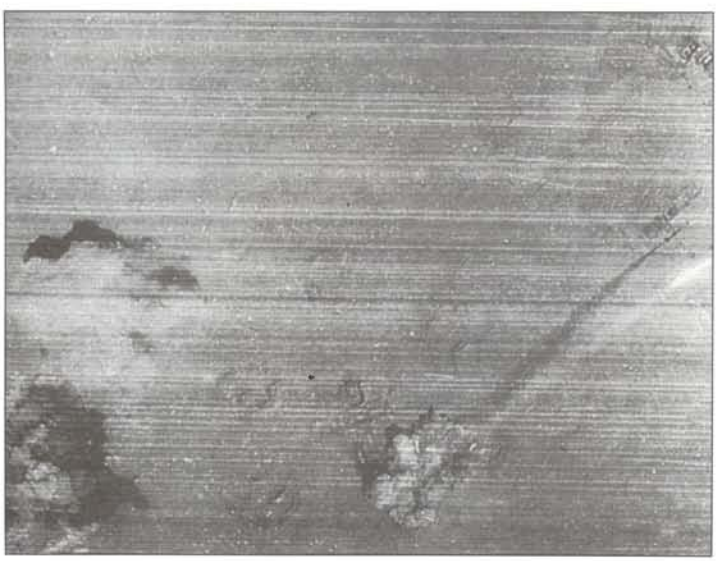
Frustrated by its inability to secure air superiority over the west bank of the Suez Canal, the Israeli Air Force looked for some sort of success. The opportunity arose in late July 1970 when a Soviet flown MiG-21 damaged an Israeli A-4 with an AA-2 Atoll AAM. An ambush was organized in the area of operations of the Soviet interceptors in order to deter them from any further aggression. The ambush included three four-ship formations of Mirages and a single four-ship formation of F-4s with the finest Israeli Air Force fighter pilots, a team of MiG-killers. The plan was quite simple: four Mirages were to fly the pattern of a high-altitude reconnaissance mission over the area where Soviet flown MiG-21s were active. Each pair of armed Mirages flew very close to each other to simulate on the radar screen a typical reconnaissance mission by two unarmed Mirages. To complete the picture, the usual back up of such a mission, two four-ship formations on combat air patrol in the air *plus* another four-ship formation on quick reaction alert at the nearest air base, were present.

A third Israeli Air Force A-4 squadron was formed in 1969 *(IAF)*

The Soviets fell into the trap, scrambling four four-ship formations in succession to intercept the Israeli 'reconnaissance aircraft' that in fact intercepted the interceptors. Flying in the 'bait' formation, Asher Snir shot down a MiG-21 although he was immediately damaged by an AA-2 which hit his nozzle but did not explode, and the damaged Mirage returned safely to its base. Number three in the 'bait' formation was Avraham Salmon who was credited with one-and-a-half kills. He had to share a kill with Iftach Spector who was scrambled from Refidim to replace two of the Mirages on combat air patrol that had to return to base when one developed a mechanical problem. Another two Soviet flown MiG-21s were shot down by the F-4s: Avihu Ben-Nun and his navigator Shaul Levy shot down a MiG-21 with an AIM-7 Sparrow AAM, while Aviem Sela and his navigator Reuven Reshef shot down a MiG-21 with an AIM-9 Sidewinder AAM.

The air combat versus the Soviet flown MiG-21s was the highlight of the Attrition War for the Israeli Air Force. It has also been reported that the Egyptian pilots were also elated by the Soviet defeat since up until then they had had to live with arrogant Soviet criticism of their own performance and poor achievements in air combats against the Israeli Air Force. Nevertheless this morale boosting achievement did not change the course of the war. A fifth Israeli F-4 was lost on 3 August to an SA-3, while another F-4 that was damaged by an SA-3 returned with an injured pilot who flew the aircraft with the help of his navigator. Four days later a ceasefire came into effect, the result of a US diplo-

On a clear day the launch of an SA-2 easily be observed *(IAF)*



The broken nose section of Avihu Ben-Nun's F-4E at Refidim in July 1970 ***(IAF)***

matic initiative that viewed a ceasefire as vital to the stability of the region in light of the direct Soviet intervention in the conflict.

President Nasser announced his agreement to the US initiative on 23 July thus paving the way to the end of the Attrition War. His concession was viewed at the time as an admission of his failure to achieve the original objects of his aggression. This was only partially true,as was the belief that Israel had won the Attrition War since its objects were fully achieved: a ceasefire without withdrawing even an inch from the banks of the Suez Canal. The truth was somewhere in between. Nasser probably understood that his aggression had failed, yet he was waiting for a major military achievement before he could have agreed to a cesaefire. This achievement came in the early summer of 1970 when the Soviet backed Egyptian Air Defence Force won air superiority over the west bank of the Suez Canal from the hard-pressed and exhausted Israeli Air Force.

As part of the ceasefire agreement Egypt agreed to freeze the 7 August 1970 status of its air defence network under the supervision of US Air Force U-2 reconnaissance flights, but when the results of an Israeli Mirage reconnaissance flight on 9 August 1970 by Yitzhak Nir were analyzed it became apparent that Egypt had rolled forward its air defence network until it covered not only the whole west bank of the Suez Canal but also up to six miles into Israeli-held Sinai to the east of the Canal. Israel's diplomatic protests were to no avail and military action was out of the question: first because Israel had just achieved the ceasefire that it had so

Israeli Air Force No. 101 Sqn commander Iftach Spector flew Mirage 52 to engage Soviet pilots on 30 July 1970 ***(Ron collection)***

Israeli Air Force No. 119 Sqn Mirages line up for the last time in October 1970. The squadron was credited with 24.5 kills during that year *(Nir collection)*

long fought for, and second because Israel had no real military option. The Israeli Air Force had no answer to the ground based air superiority challenge, and this was to become crystal clear when the Yom Kippur War broke out on 6 October 1973.

A Three Year Pause

Although Israel was truly surprised on 6 October 1973 when both Egypt and Syria launched a simultanous offensive, the new Middle East war was really the direct outcome of the inability of the diplomats not only to solve the basic dispute but also not even to reach any kind of minor progress. Israel was still focused on the preservation of the Status Quo and had come to the wrong conclusion that the Arabs had no real military option if they were to gain any diplomatic achievements. Israeli intelligence was convinced that no Arab offensive was feasible before the Egyptian Air Force equipped with high quality long-range attack aircraft.

Though the ceasefire had been in effect since 7 August 1970, the Middle East was neither quiet nor peaceful and aerial activity was not an exception. Reconnaissance flights were the trigger for many incidents, but for a year both sides escaped casualties until an Egyptian Su-7 was shot down by anti-aircraft fire during a low level recconnaissance mission on 11 September 1971. Six days later the Egyptians retaliated with a well-planned SAM ambush when a SA-2 shot down an Israeli Stratocruiser

The Israeli Air Force introduced in-flight refuelling capability in the early 1970s in the shape of locally modified Boeing KC-97s *(IAF)*

Reconnaissance flights were the trigger of many air combats, this is an Israeli Air Force RF-4E ***(Ronen collection)***

special mission aircraft flying a routine high altitude reconnaissance mission along the Suez Canal some 15 miles inside Israeli territory. It was the first demonstration of the Egyptian ability to hit aircraft flying well within the supposedly safe air space of Sinai, while Israeli retaliation was also of future significance. On 18 September the Israeli Air Force attack aircraft launched AGM-45 Shrike anti-radiation missiles at the radar emissions of the Egyptian SAM batteries. But the whole operation was not successful and only highlighted again the fact that the Israeli Air Force had no tactical answer to the Egyptian air defence array.

An escalation in the mutual reconnaissance effort came on 10 October 1971 when the Soviet detachment of MiG-25s made its first incursion into Israeli air space. Additional missions followed on 6 November, on 10 March 1972 and on 16 May 1972 when Israeli F-4 pilot Zvi Kanor launched two AIM-7 AAMs from a range of 25 miles and 17 miles while flying at an altitude of about 50,000 feet and in a head-on scenario. The AAMs homed perfectly and passed the MiG-25 within the effective kill envelope but did not explode. It was assumed that the detonators failed due to the very high closing speed. As consolation to the Israeli F-4 air crews, on 13 June two RF-4s were intercepted by Egyptian MiG-21s at the end of a reconnaissance mission as they made for Mansura air base. In

Deliveries of the improved A-4N Skyhawk II to the Israeli Air Force began in 1972 ***(IAF)***

Except for the Mirage the Super Mystère was the only French fighter still in Israeli Air Force service at the time of the Yom Kippur War, although by then it had been modified considerably with a US turbojet and was known as the Sa'ar. ***(Peleg collection)***

an air combat between the intercepting Egyptian MiG-21s and the escorting Israeli Mirages and F-4s, the F-4s shot down two Egyptian MiG-21s. Israel Baharav, the leader of the Mirage section, later recalled:

'It was a recce flight which crossed the complete Nile Delta and had to exit from somewhere over the Delta. We had to meet the recce aircraft – which could not manoeuvre – as it exited and take a position right behind it like a stone wall so that the MiGs would have to engage us, ten miles behind.

'We were a pair of F-4s and a pair of Shahaks which I led. We flew very low over the Mediterranean and pulled up in position near the exit point. A lot of MiGs were scrambled from all over the Nile Delta (air bases) to try and cut it off. Since the recce aircraft was higher and faster, we saw the MiGs trying to block its exit but each one of them failed. Yet there was one four-ship formation, pairs in line astern, which managed to track its path pretty well, got on its tail and started to close the distance. Our briefing was crystal clear: do not leave the recce aircraft, it cannot fight, you are his stone wall. However there is a limit to anything. The F-4s were in front of us and the MiGs were one-and-half mile behind us!

'It was time to do something otherwise they would have shot us down. Are we sitting ducks? I reported, "five miles", "four miles", "three miles", "two miles", "one-and-half miles". At two miles I asked the leader in the F-4 to engage but he asked the ground controller and got no answer. At three miles, no problem, at two miles I asked. At one-and-a-half miles I decided that I could not wait any longer so I took them on.

'I later learnt that during those critical moments there was an electricity failure at the ground control station and they lost their communication system. They did not hear us so they could not order us to engage. The reason why I did not shoot down the MiGs was a matter of gunnery. My guns were inadequate and the F-4s got the MiGs, although in fact I set them up nicely. The moment I turned into them the MiGs also turned and it was a very convenient situation for the F-4s.'

Yet More Skirmishes

On 8 September 1972 the Israeli Air Force launched a massive attack on eleven PLO installations in both Lebanon and Syria in retaliation for the massacre of Israeli sportsmen at the Munich Olympic Games. A small scale Syrian Air Force retaliatory action followed the next day, but three of the four Su-7s that penetrated Israeli air space were shot down, two by Israeli Mirages and the third by an Israeli F-4. The unrest along both the Lebanese and the Syrian borders continued well into 1973. On 9 November two Syrian MiG-21s were shot down by Israeli Mirages while less than a fortnight later, on 21 November another large scale skirmish erupted on the Syrian border which also involved extensive aerial action. In two separate air combats six Syrian MiG-21s were shot down. Interestingly enough it was the first kill for all of the six Israeli pilots. Mirage pilot Yuval

Ne'eman recalled his first kill:

"It was an interesting combat. Four F-4s bombed Sweida and we were the escort: two F-4s leading with their radars and we, two Mirages, were trailing and using our eyes. En route to Sweida two MiG-21s crossed our path between us and the F-4s. We simply turned after them and shot them down, it happened in a matter of seconds.'

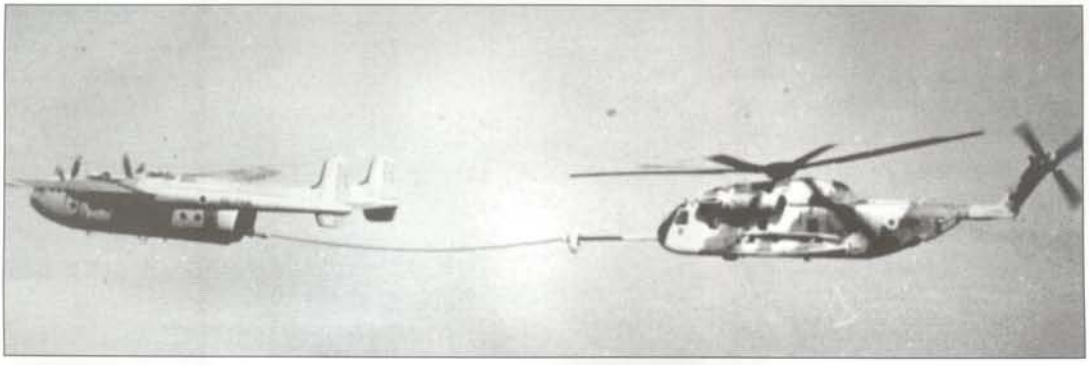
A single Syrian MiG-21 was shot down on 2 January 1973 and another crashed in Lebanon as a result of a spin. On 8 January the Israeli Air Force once again attacked Syrian targets and six Syrian MiG-21s were shot down including two shot down by IAI Neshers, the first kills for the Israeli produced Mirage 5 version that entered Israeli Air Force service in 1971.

Israeli Air Force No. 117 Sqn pilot Yuval Ne'eman being greeted after shooting down his first MiG on 21 November 1971

The series of successful air combats by the Israeli Air Force came to an abrupt and tragic end on 21 February when a Libyan Boeing 727 airliner on a routine Tripoli-Benghazi-Cairo flight strayed into Sinai, possibly due to a severe sandstorm. The two intercepting F-4s ordered the 727 pilots to follow them to a landing at Refidim air base in Sinai but the airliner crew, probably realizing their error, turned back west. The F-4s fired warning shots, then aimed at the wingtip and finally at the wing root. 105 people were killed and only seven survived the crash. This tragic action may have shocked the decision makers, at least temporarily, and for about six months the level of hostilities was scaled down.

In June 1973 it was reported that Libyan Mirages were operating from Egyptian air bases. This was only part of an Egyptian led effort to concentrate Arab air power in both Egypt and Syria to augment the Egyptian and Syrian Air Forces. An Iraqi Hunter wing was deployed to Egypt while arrangements for the deployment of a single Iraqi MiG-17 squadron,

The IAI Nesher that entered service in 1971 was basically a locally manufactured Mirage 5 *(IAF)*



An Israeli Air Force Nord Noratlas refuels a Sirkosky S-65 in flight *(Peleg collection)*

three MiG-21 squadrons and two Su-7 squadrons to Syria were made. Algeria deployed three squadrons to Egypt, one each of MiG-17, MiG-21 and Su-7, and a single MiG-21 squadron to Syria. Libya deployed two Mirage squadrons to Egypt. Morocco failed to deploy the promised F-5 squadron since its pilots had been arrested following an attempted coup!

Israel was unaware that this massive build-up of air power in Egypt and Syria was a significant part of the Arab attack plan. The Israeli Air Force was preparing itself to achieve air superiority by the destruction of the enemy's air defence arrays in a highly detailed and well concentrated attack effort. It had also been promised by the Israel Defence Force that in any future war they would be given two days to fight for air superiority during which time the IDF ground forces would not seek any air support. The self confidence of the Israeli Air Force in retrospect, despite all the warning signs, was even boosted on 13 September 1973 when in a series of air combats following an Israeli reconnaissance mission over Syria when Israeli fighters shot down twelve Syrian MiG-21s for the loss of a single Mirage. Israel Baharav, who was leading the back-up combat air patrol, later recalled:

'Since the four-ship formation was not in the area of the ambush nobody wanted to fly – but it was not our squadron's turn (to participate in the ambush itself). It was the turn of other squadrons. So our pilots said, "We will wait for the next time when we will be in the ambush area". I was the senior deputy commander and I organized this business so I took a reserve pilot, (Avraham) Salmon, and two completely inexperienced young pilots, (Amiram) Kal (Kalichman) and (Yosef) Ra'anan and organized a four-ship formation.

'It was a distance of 80 miles (between the combat air patrol area and the ambush area). It was a lot. Even if you fly very fast it will take 8-10 minutes. An air combat lasts less...All the time I was switching channels on the radio to hear what was going on. When I heard that the MiGs were coming, it became hot. I began to fly north. The controller screamed, "Come back, you have no

The Rafael Shafrir 2 AAM seen on this Mirage was unveiled to the public on 27 March 1973 although it had been in operational service since 1969 *(GPO)*

permission, return immediately to the patrol". I was already climbing with the afterburner but I did not yet drop the external fuel tanks. When I reached high altitude I ordered the jettison of the external fuel tanks and made a supersonic dive towards the combat area.

'Soon after I was granted permission to leave the combat air patrol and fly north. A little later I heard screaming and yelling because additional MiGs had arrived. The controller ordered, "full power" and he vectored me into the combat area, but I heard on the radio that additional MiGs were coming in from the east. According to my calculations the MiGs in the combat area were running out of fuel. By the time I arrived they would not be there. The danger was from the MiGs that were coming from the east. Should I cross their path? No. I wanted to catch the new wave of MiGs. It was a series of undisciplined actions. I did not listen to the controller.

'In the combat I shot down two MiG-21s, one with an AAM and one with cannon. Good gunnery, 600m range. In the debriefing it turned out that when I arrived our pilots were already under pressure and low on fuel. Fresh Syrian aircraft had arrived and I flew in straight on their tails. We were just a four-ship formation and there were more MiGs. I could not handle all of them but at least I could handle some.

'Salmon went after a pair and shot down one MiG-21. Kal was hit. I sent him deep over the sea when I understood that it was merely a fuel leak so that he would get away from the combat area. Na'aman was my wingman. After I shot down my first MiG I let him go after the second because he was in a better position. He passed him twice or three times in impossible positions. Then I asked him to step aside and let me have a try. I shot down two, Salmon shot down one and the young pilots did nothing.'

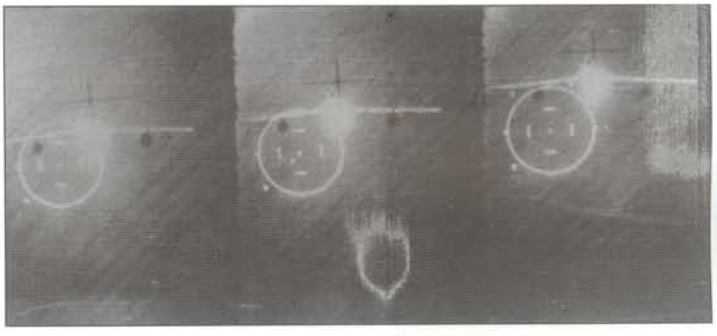
1973 THE YOM KIPPUR WAR

Egypt and Syria attacked Israel simultaneously at noon on 6 October 1973. It was Yom Kippur, the Jewish Day of Atonement, during which Israel was at a standstill: no radio or TV broadcasts, no traffic, no eating, no drinking, nothing. There were already ominous signs of war even for the self-confident Israel Defence Force Intelligence officers and decision makers, but just before noon the Israeli government rejected the IDF suggestion to launch a pre-emptive strike. Israel was to absorb the first blow with its small regular army thinly spread on the Golan Heights and the Suez Canal. Under normal circumstances the Israeli Air Force was to support outnumbered regular Israel Defence Force forces until the arrival of mobilized reserves, but this was not expected happen to within 24 hours at best for the first units. And what about the promised two days for the air superiority battle?

At exactly 1400 on 6 October Israeli Air Force fighters were scrambled from their bases. Here and there they achieved local success: shooting

Israeli Air Force ground crews attend a No. 144 Sqn Nesher during the Yom Kippur War, the squadron engaged Egyptian Air Force Su-7s over Om Hashiba on 6 October 1973 ***(IAF)***

An Israeli Air Force Sa'ar takes-off during the Yom Kippur War *(IAF)*



A MiG-17 in the gunsight of an Israeli F-4 *(IAF)*

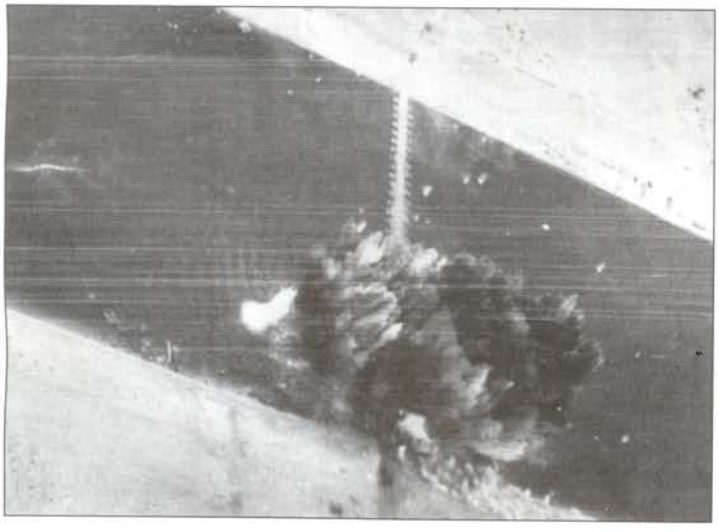
down seven attacking Egyptian fighters for no losses over Ophir air base; shooting down an AS-5 ASM launched by an Egyptian Tu-16 towards Tel Aviv; shooting down most of the Egyptian Su-7s that attacked the major Israel Defence Force command and control centre at Om Hashiba – including the one flown by Atef Sadat the half-brother of the Egyptian President Anwar Sadat. But overall the picture was gloomy. Shlomo Shapira, the commander of the Israeli Super Mystère squadron, recalled his first mission at noon on 6 October:

'We were scrambled to the north and got as far as Netanya. Then we received a change of mission to rush (south) to the (Suez) Canal. So we rushed to the (Suez) Canal and got as far as the area of Gaza, and then the

The Egyptian Air Force made extensive use of its Mi-8 helicopters to insert commandos into Sinai. One example was captured by the Israelis almost intact, except for a broken nosewheel, and was flown by the Israeli Air Force *(IAF)*

An Israeli Air Force Sa'ar (improved Super Mystère) that was destroyed in a take-off accident on 7 October 1973. The pilot was badly injured *(IAF)*

controller once again changed our direction. He frantically ordered us north to Mount Hermon. On our way it was explained to us that (Syrian) forces were approaching the (Israeli) strongpoint from the north. There was a tank about 100-200m to the west of the (Israeli) strongpoint which was ours but it had possibly been abandoned by its crew. Our guys were inside the bunker and our target was to attack enemy forces. Everything out there was the enemy except for the tank. We mainly attacked targets to the north of the (Israeli) strongpoint, while there was a fair mess because the Syrians were firing quite a lot of mortars. There was also a SAM threat. We tried to enter from the rear, pull-up at the last moment



Attacking the Egyptian bridges on the Suez Canal was one of the top priority missions of the Israeli Air Force *(IAF)*

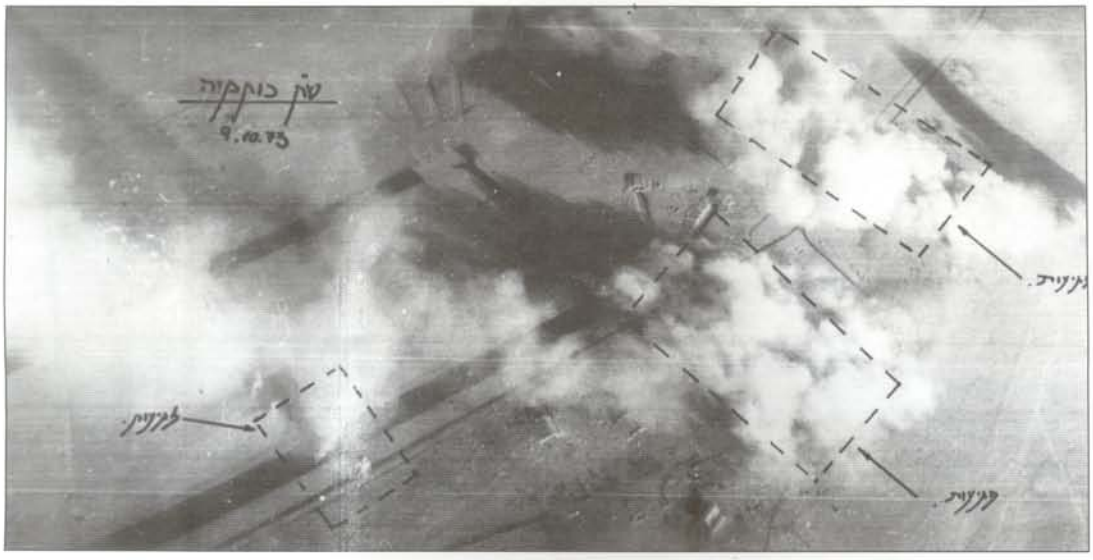
Israeli Air Force No. 101 Sqn pilot Dan Sever returns to the hardened aircraft shelfer (HAS) at Refidim in Nesher 17 after shooting down an Egyptian Air Force Su-7 on 8 October 1973

An Israeli F-4 in pursuit of an Egyptian MiG-17 over the dunes of Sinai on 8 October 1973

and get out immediately. We knew that if a SAM were to be launched it would be difficult to detect because of the clouds. My four-ship formation returned safely and I think that we did some damage, but we did not save the (Israeli) strongpoint.'

Early next morning the Israeli Air Force launched its planned air campaign to achieve air superiority. Obviously the operation was far removed from the actual conduct of the war. While the greatest threat to Israel was in the north where Syrian armour captured a significant portion of the Golan Heights, only some twenty miles wide, and threatened to advance past the former international border into Israel itself, the Israeli Air Force operation was launched against Egypt. The Egyptian army crossed the Suez Canal but advanced no more than ten miles in order the stay well within the protective shield of their Air Defence Force network. There were still more than 100 miles to cover before reaching the international border. The ill-fated decision to launch the attack on the Egyptian front rather

Israeli Air Force No. 144 Sqn commander during the Yom Kippur War Menachem Sharon climbs out of the cockpit of his Nesher inside a HAS after a successful mission *(Sharon collection)*



Israeli F-4s attack the Egyptian Air Force Kotamiya air base on 9 October 1973 *(IAF)*

than on the Syrian front was to cost the Israeli Air Force dearly. The first wave attacked the anti-aircraft positions with cluster bombs, while the next waves were planned to attack the SAM batteries. But when the aircrews returned from the first wave they learned that the operation had been called off and that the next wave would be aimed at the Syrian air defence network.Since it was just improvised, the second wave was disastrous. The Israeli Air Force lost five of its precious F-4s and did not knock out of action even one single Syrian SAM battery.

The Israeli Air Force abandoned its effort to achieve air superiority, and for the time being the SAM won over the aircraft, though the Israelis continued to fly battlefield air interdiction and close air support missions well into the SAM defended areas. On 8 October a major Israel Defence Force counter-offensive in Sinai failed, and until 14 October the focus turned to the Syrian front while the Egyptian front remained relatively static. At the Golan Heights more than two Israeli Defence Force reserve divisions augmented the two regular armoured brigades, one of which had been virtualy wiped out. The Syrians were slowly pushed back at first to the ini-

Israeli Air Force No. 101 Sqn commander 'Avi' Lanir talks to his ground crews during the war. He was shot-down on 13 October 1973 *(IAF)*

Israeli Air Force No. 113 Sqn reserve pilot Reuven Rozen shot-down a Syrian Su-20 on 13 October 1973 in Nesher 14 *(IAF)*

This Israeli Air Force No. 69 Sqn F-4E was shot down over the Syrian front *(Nicolle collection)*

tial lines of attack and then even beyond – well into Syria. By 12 October Damascus was within Israeli artillery range and the threat to northern Israel had been removed. The next day an Iraqi armoured brigade, the vanguard of an Iraqi expeditionary force, was destroyed and although fighting continued the Syrian front was relatively quiet for the next ten days or so while the focus of attention turned to Sinai.

Victory After All

Air superiority over the Suez Canal during the Yom Kippur War was primarily achieved by ground based units. At first it was the turn of the Egyptian Air Defence Force to win air superiority, but on 14 October the Egyptian army finally launched an armoured offensive all along the Suez Canal. Three Israeli armoured divisions destroyed about 200 of the 1,000 attacking Egyptian main battle tanks at the cost of ten Israeli tanks. It was an action that was to have a significant impact on the events, and perhaps this great armoured battle was the true turning point in the fighting on the Egyptian front. The next day the Israelis launched a classic indirect approach offensive, cutting in between the Egyptian 2nd Army in the north and the Egyptian 3rd Army in the south, crossing the Suez Canal to the west and creating a major bridgehead. Israeli ground forces advanced to the west and to the south, a manoevre that brought them to within 65 miles of Cairo and resulted in the Egyptian 3rd Army being cut off. At the

Shortly before the Yom Kippur War the Israeli Air Force A-4E and A-4H attack aircraft were fitted with a 'hump' that offered the additional space required by an improved avionics package *(Dagan collection)*

Black outlined yellow triangles were painted on the Israeli Air Force delta-wing fighters during the war following the use of Libyan Mirages on the Egyptian front *(IAF)*

same time Israeli ground forces destroyed the Egyptian rear units, including those of the Air Defence Force. Israeli armour won the air superiority battle and offered the Israeli Air Force the freedom of operation it had long been seeking. Although portions of the Egyptian Air Defence Force were still intact it was by then a collection of scattered defence systems rather than a coherent network,thus allowing the Israeli Air Force to attack and finally even to knock-out SAM batteries.

It was at this stage, when the Egyptian Air Defence Force collapsed under the combined pressure of Israeli armoured forces and attack aircraft that the Egyptian Air Force was called upon for support. Up until then the Egyptian Air Force was used in a controlled manner mainly on limited offensive operations flying through 'safe' corridors within the air space defended by the Air Defence Force. From about 18 October until the end of the war on 24 October, intensive air action by both the Egyptians and the Israelis was the order of the day.

Israeli Mirage and Nesher fighters were credited on 18 October with fourteen kills on the Egyptian front including three Libyan Mirages. Gidon Livni, the top-scoring pilot of the day with 2.5 later recalled:

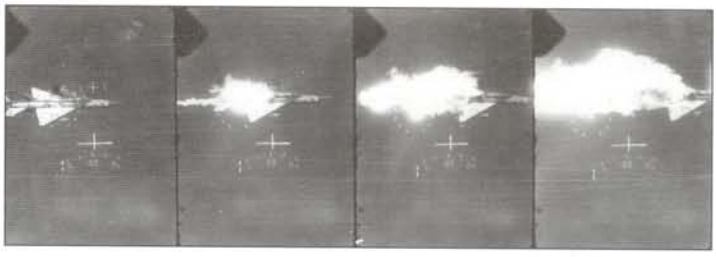
'The controller vectored us straight behind a four-ship formation of MiG-17s flying like sitting ducks. I immediately shot down one with a Shafrir 2 AAM, it caught fire and fell into the water. As I wanted to take another Yosef Ra'anan yelled, "MiGs behind us". The MiG-21s that escorted the MiG-17s were behind us – we were actually in a sandwich. We broke and the battle commenced. It was my first multi-bogey engagement and I learned a

The formidable Egyptian Air Defence Force is evident in this photo of Israeli F-4s attacking Tsalchiya air base, each arrow represents a surface-to-air missile *(IAF)*

lot from it, a very nice combat. I stayed with (Moshe) Hertz and we went after a MiG-21. Hertz shot at him from inconvenient angles and I said, "Let me, I am in a good position", but no. Hertz exhausted his ammunition on the MiG and made some minor hits. The MiG turned off its afterburner and had a fuel leak. Hertz disengaged and I shot at the MiG. I thought that I did not hit him and we went into scissors over Fayid with a lot of anti-aircraft fire from the Egyptian ground forces. They did not care about shooting at their MiGs. We were at low altitude, maybe 1,000-1,500ft, when I saw another MiG closing in on me. I let my MiG go and accelerated to 350 knots. He started to shoot very early from long range and I saw his tracers. I broke and entered scissors with both of them. I opened the distance, fired a burst and he caught fire – that was the (famous) kill. I then returned to the other (damaged) MiG but as I was about to open fire the pilot ejected. There were still MiGs out there and I still had plenty of ammunition, but I ran out of fuel so I returned to Refidim.'

Egyptian soldiers examine an Israeli Bell 205 that had been shot down by a SAM (*Nicolle collection*)

Two Israeli F-4s and a single A-4 were lost on 18 October during an attack on the air defence array in the northern sector of the Suez Canal.

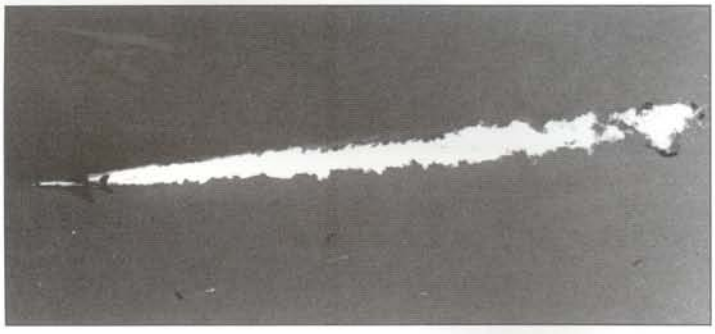


Perhaps the most amazing Israeli Air Force gunsight camera sequence of an air-to-air kill was captured by No. 101 Sqn pilot Gidon Livni on 18 October 1973 *(IAF)*

Gidon Livni was the last Israeli Air Force fighter pilot to become an ace while flying the delta wing fighters: the Mirage and the Nesher *(Livni collection)*

Five No. 113 Sqn Nesher pilots, left to right: Gideon Dror, Shlomo Levi, Amos Shachar, Moshe Hertz and Amit Eshchar face the Israeli Air Force commander Binyamin Peled (right) and the Hatzor air base commander Amos Lapidot (second from right) at the squadron's briefing room during the Yom Kippur War *(IAF)*

But the combined Israeli Air Force and Defence Force operation had its effect, and 19 October was the first day of the war during which the Israeli Air Force did not lose a single aircraft. By this time the Israeli offensive was threatening to topple the complete Egyptian deployment. On 20 October the USSR invited the US Secretary of State to Moscow in order to put diplomatic pressure on Israel to cease hostilities immediately, thus saving Egypt from defeat and preserving at least a portion of its initial success. The urgent diplomatic action prompted Israel to intensify its offensive on the Egyptian front in order to secure the complete encirclement of the Egyptian 3rd Army. While on the Syrian front a limited offensive was launched on 21 October to recapture the strategically important observation post on the summit of Mount Hermon that had been taken by Syrian commandos on 6 October. It was the largest Israeli Air Force heliborne operation of the war, although not the war's largest. The Egyptian Mi-8s deserve that honour for the dropping of Egyptian commandos into Sinai during the opening stages of the war. Israeli S-65 and Super Frelon helicopters landed more than 600 troops on the ridge north of the summit, while a ground force fought its way up to the summit from the south. In the air above, the Israeli Air Force supported the operation while Syria sent its MiG-21s to the area. Three Syrian MiG-21s were shot down, one by a Mirage pilot and two by F-4



An Egyptian MiG-21 shot down over the Israeli Defence Force bridgehead on 19 October 1973. The pilot ejected though his parachute is yet to deploy. He was taken PoW by an IDF tank crew immediately after touching the ground *(GPO)*

None of the Israeli Super Frelons was lost during the Yom Kippur War, although two of their S-65 counterparts were lost

Towards the end of the Yom Kippur war Israel received F-4Es from the USA to replace losses *(IAF)*

crews, for the loss of a single F-4 plus an A-4 lost in a close air support mission. The Israel Defence Force offensive at Mount Hermon was successfully completed on 22 October.

UN Resolution 338 called for a ceasefire to start at midnight on 22 October, but the fighting did not cease until 24 October. Fighting was fierce on the last two days of the war. On 23 October Israeli F-4s attacked the Khan El-Ayash fuel installations in Syria and in an air combat versus Syrian MiG-21s Dani Halotz, the current Israeli Air Force commander, shot down two MiG-21s. Down on the Egyptian front an Israeli Nesher was saved that day when its pilot, Moshe Hertz, landed at Fayid air base, a site that had only been captured by the Israel Defence Force on 21 October. Fayid subsequently became the hub of Israeli Air Force operations in the west bank of the Suez Canal with a lot of air traffic: light planes, transports and helicopters. Other ex-Egyptian Air Force air bases captured by the Israel Defence Force west of the Suez Canal were Kabrit, Kasfreet and Shalufa, but these were not used by the Israeli Air Force.

An Israeli S-65 helicopter on a casualty evacuation mission was lost on the morning of 24 October with all 24 on board including the casualties who had escaped a worse fate in the futile Israel Defence Force attempt to conquer Suez City which cost the lives of more than 80 Israeli soldiers. Later that day, at noon, the last air combat of the war took place over the Israeli bridgehead, and in many ways it resembled the Attrition War air

Israeli F-4s attacked a number of strategically important targets in Syria like this fuel tank complex at Tartus *(IAF)*

Israeli Air Force Noratlas transports at Fayid air base *(IAF)*

Israeli Air Force No. 101 Sqn pilot Yoram Geva was credited with two kills, one each on 20 October and on 21 October, while flying Nesher 88 *(Livni collection)*

Israeli Air Force Mirage and Nesher pilots at Hatzor air base during the Yom Kippur war. Sitting at the front table (left to right): Giora Epstein, Ra'anan Ne'eman and Avraham Salmon *(IAF)*

combats when the Israeli Air Force sent special teams of expert MiG-killers to engage the Arab pilots. Three Israeli four-ship formations were to participate in the air combat although only ten Israeli delta-wing fighters actually took part in the action, which also involved some twenty Egyptian MiG-21s. Giora Epstein shot down four Egyptian MiG-21s to bring his personal score to 17 kills, the top scoring Israeli Air Force fighter pilot. Israel Baharav and Ilan Gonen shot down two MiG-21s each, Amit Eshchar, Avraham Salmon and Michael Zuk shot down a single MiG-21 each and Eliezer Ye'ari and Dan Sever shared a single MiG-21 kill.

Shortly after the Yom Kippur war Israel Baharav (centre) is seen flanked by Gidon Livni to his left and by Hertzel Bodinger to his right *(Livni collection)*

AN UNEASY PEACE

Although the Israeli Air Force emerged victorious from the Yom Kippur War it was shocked to its foundations by its inability to win the air superiority battle on its own. Former Israeli Air Force commander (1958-66) Ezer Weizman coined the phrase that 'the missile bent the aircraft's wing' and the Israeli Air Force found itself occupied in search of a cure. The ultimate answer was superior technology. The Israeli Air Force purchased superior aerial platforms and developed new weapons and new tactics to counter the SAM threat in order to swing the pendulum of warfare back in its favour. Throughout the remaining years of the 1970s the Israeli Air Force was preoccupied with the development of a solution to the SAM threat, while at the same time operational activity continued.

Despite the ceasefire, hostilities continued for more than a month on the Egyptian front and were resumed in the spring of 1974 on the Syrian front. Down south the main friction point was the Egyptian attempt to resupply the surrounded 3rd Army and the Israelis shot down several Egyptian helicopters. On 9 November 1973 an Israeli RF-4E was shot

To improve the survivability of its A-4s the Israeli Air Force introduced during the Yom Kippur War the installation of a lengthened nozzle *(GPO)*

A rare view of a Syrian Air Force MiG-21 under a HAS at an air base near El-Hama in 1974

down by a SA-2. The pilot Gidon Shefer survived ejection from an aircraft travelling at 48,000 feet at 1.7 Mach but his navigator Ofer Tsidon was killed. The last air combat on the Egyptian front took place on 6 December but did not involve Egyptian pilots. Two Israeli F-4s shot down a single North Korean flown MiG-21, while a second was shot down in error by the Egyptian Air Defence Force.

The spring of 1974 melted the snow on Mount Hermon and this prompted the Syrians to launch an effort to recapture the summit. Fighting lasted for more than a month and the cost for both sides was dear but to no effect. An Israeli F-4 was shot down on 6 April 1974, most likely by a shoulder launched SA-7, and its crew became PoWs in Lebanon. Another F-4 was lost on 19 April. The pilot was killed and the navigator became a PoW in Syria. The same day an Israeli A-4 was also lost with the pilot killed, while two Syrian MiG-21s were shot down in an air combat by Mirage pilot Avraham Salmon. Ten days later, on 29 April, another two Syrian MiG-21s were shot down by Israeli Mirages, the last kills for the legendary French fighter in Israeli Air Force service. Yet one more aircraft was lost to the Israelis when a reconnaissance Mirage was shot down on 6 May, but the pilot Eitan Karmi survived ejection from the high flying high speed aircraft. It was his third successful ejection from a delta-wing fighter!

By the mid-1970s the Israeli Air Force used a relatively quiet period for the introduction of new weapons, the absorption of new tactics and reorganization. Intelligence got the highest priority and Israeli Air Force Intelligence became a separate Group commanded by a Brigadier General. The arrival of the first F-15s in 1976 gave the Israelis a marked edge over the Arab air forces, and this was augmented by E-2C AEW aircraft in 1978. Even more important was the introduction into service of many components that were eventually to compose an integrated system primarily aimed at the destruction of SAM arrays and the achievement of air superiority. Among those systems were unmanned air vehicles for real time intelligence, both air and surface launched anti-radiation missiles, decoys, electronic warfare systems and command and control systems.

A Syrian SAM battery attacked by the Israeli Air Force in the 1974 spring fighting *(IAF)*

The Lance surface-to-surface missile (SSM) system was one of the new weapons that Israel purchased in the mid-1970s when it focused on efforts to create an integrated answer to the SAM threat *(IDF Spokesman)*

The IAI Kfir entered Israeli Air Force service in 1975 *(GPO)*

The F-15 widened the technology gap between the Israeli Air Force and the Arab air forces *(GPO)*

While the Israeli Air Force was honing its ability to challenge Arab integrated air defence arrays, Israel was once again surprised when Egyptian President Anwar Sadat extended the hand of peace in 1977. His historic visit to Israel that year was followed by a peace treaty, signed in 1979, that stipulated an Israeli withdrawal from Sinai by April 1982. It was a major blow to the Israeli Air Force that it was about to lose three major air bases (Eitham, Etzion and Refidim), many other bases, critical early warning territories and vast training areas. But the fruits of peace quite rightly took priority.

Operations in Lebanon

In parallel with the Egyptian-Israeli peace process, Syria adopted an aggressive stance aimed at taking over Egypt's leadership in the Arab-Israeli struggle. In 1976 Syria invaded Lebanon and gradually Lebanon became a Syrian puppet state. While the Jordanian and Syrian borders were quiet and Egypt was talking peace with Israel, the PLO only had the option of Lebanese soil from which to wage its armed struggle. Thus the focus of Israeli Air Force operational activity was turned on Lebanon, but with the significant Syrian presence it was only a matter of time before the air forces of Israel and Syria would clash again. Three months after Egypt and Israel had signed their peace treaty in Washington the inevitable happened. On 27 June 1979 six Israeli F-15s and two IAI Kfirs entered combat with Syrian MiG-21s over Lebanon. The technology gap was so wide that the Syrian MiG-21s had no real chance. Four MiG-21s were shot down by the F-15 pilots and a fifth by a Kfir pilot. Another four Syrian MiG-21s were shot down by Israeli F-15s on 24 September 1979, including a double kill by Avner Naveh, while a single Syrian MiG-25 was shot down on 13 February 1981. By this time

Israeli Air Force C-130H 420 was the aircraft that returned the freed hostages from Entebbe in July 1976, the longest reaching and most famous Israeli Defence Force commando raid ever. The hostages were the Jewish passengers and crew of an Air France airliner that was hijacked by a PLO group *(IAF)*

An IAI Kfir inaugurates the first runway at the new Uvda air base on 8 November 1981. Three new air bases (Nevatim, Ramon and Uvda) were constructed to compensate for the loss of the Sinai air bases following the peace treaty with Egypt *(GPO)*

Israeli F-15s had been augmented by the F-16s that had begun to arrive in July 1980, and this combination of F-15s and F-16s was used to destroy the Iraqi nuclear reactor on 7 June 1981.

Air combats over Lebanon continued, but it was a 28 April 1981 Israeli Air Force action in support of the Christain militia in Lebanon that resulted in a major escalation. In two separate engagements that day Israeli F-16s shot down two Syrian Mi-8 helicopters deep in Lebanon. From the Syrian point of view this action was a violation of a red line. While the usual air combats between fighters had no significant impact on the Syrian presence in Lebanon, the shooting down of assault helicopters in direct support of a local Lebanese force directly endangered Syrian control. To protect their forces in Lebanon the Syrians inserted an integrated air defence array into the Lebanon Valley. In Israel's view this was on its own a major escalation since it limited the Israeli freedom of flight over Lebanon.

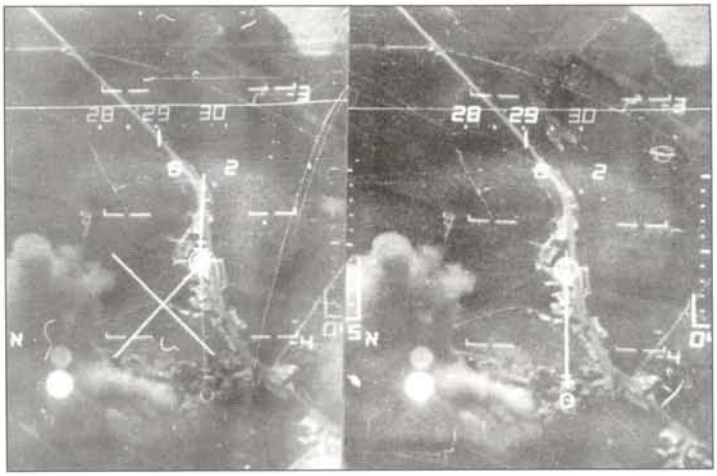
More than a year of high tension followed before Israel finally invaded Lebanon on 6 June 1982. First promoted as a limited operation to clear a 25 mile zone deep into Lebanon of PLO artillery in order to ensure 'peace' for the Galilee, Israel once again found itself manoeuvred into a major escalation by its Christian allies in Lebanon. The underlying goals of the operation were to cut the Beirut-Damascus highway on the east, capture Beirut on the west, expel the PLO from Lebanon and hand over the Lebanese Presidency to Israel's Christian allies. To achieve this Israel had to fight the Syrian forces in Lebanon.

At first the Syrians were careful, trying to learn what were the main Israel Defence Force efforts and whether this was a limited Israeli action or a full scale war. The Israeli Air Force supported the Defence Force and Syria sent its fighters to the area, but the Syrian MiG-21s and MiG-23s were no match for Israeli F-15s on combat air patrols, the technology gap was too wide. Finally the advance of the Israeli ground forces triggered the Israeli government into a decision to attack the Syrian air defence array in the Lebanon (Beka'a) Valley in order to secure air superiority over the area and efficient air support to the Israeli Defence Force. The integrated operation was launched at noon on 9 June 1982 with the Israeli Air Force utilising unmanned air vehicles to monitor the whereabouts of the SAM batteries and to access the damage in real time, decoys to trigger the Syrian radar into active operation, and air and ground launched anti-radiation missiles to

Israeli Air Force F-16 squadron commander Gidon Livni in the cockpit of his mount. His squadron was credited with five air-to-air kills during the war *(Livni collection)*

knock out the radars. A good result would allow the attack aircraft to penetrate the air defence array and destroy the hapless batteries. All of this action took place in an environment of tight command and control, electronic counter measures and electronic warfare.

Within hours the Israeli Air Force destroyed the Syrian air defence array in Lebanon without a single loss. When the Syrians realized that their air defences were collapsing they launched their MiG-21s and MiG-23s but this action only magnified the Israeli victory when the waiting Israeli F-15s and F-16s shot down 29 Syrian fighters, again without a loss. The Israeli Air Force had implemented the lessons that it had learned in the Attrition War and in the Yom Kippur War. The stigma had been removed. This time it was the turn of the missile to be bent.



The somewhat complex air-to-ground symbology on the head-up display of an Israeli Air Force Kfir during the Lebanon War ***(Dagan collection)***

The Syrian Air Force used its Gazelle attack helicopters extensively during the Lebanon War. This example was captured by the Israeli Defence Force and evaluated by the Israeli Air Force ***(IAF)***

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GLOSSARY

AA Anti-Aircraft
AAA Anti-Aircraft Artillery
AAM Air-to-Air Missile
AD Air Defence
ADF Air Defence Force
AEW Airborne Early Warning
AFV Armoured Fighting Vehicle
ARM Anti-Radiation Missile
BAI Battlefield Air Interdiction
CAP Combat Air Patrol
CASEVAC CASualties EVACuation
CoS Chief of Staff
CSAR Combat Search and Rescue
EAF Egyptian Air Force
ECM Electronic Counter Measures
EW Electronic Warfare
FMB Fast Missile Boat
IAF Israeli Air Force
IDF Israel Defence Force
IrAF Iraqi Air Force
KiA Killed in Action
MBT Main Battle Tank
OTU Operational Training Unit
PLO Palestine Liberation Organisation
PoW Prisoner of War
PR Photo Reconnaissence
QRA Quick Reaction Alert
RAF Royal Air Force
REAF Royal Egyptian Air Force
R/T Radio/Telephone
SA Sherut Avir (Air Service)
SAF Syrian Air Force
SAM Surface-to-Air Missile
SSM Surface-to-Surface Missile
UAV Unmanned Air Vehicle
UN United Nations
USAF United States Air Force
VR Visual Reconnaissance
WAAF Womens Auxilliary Air Force

Israel's successful strategy of pre-emptive air strikes on Arab airbases in the Six Day War played a critical part in their unprecedented victory. It brought them air supremacy and vast territorial buffer zones: the Sinai Peninsula, the Gaza Strip, the Golan Heights and the West Bank of Jordan, but it did not bring peace. Egypt, with the help of the Soviet Union, masterminded a war of attrition against the Israeli Air Force using the latest missile technology. The USA inevitably took Israel's side and the arrival of F-4s and F-15s helped redress the balance. Israel then held off the Arab attack of October 1973 and won another surprise victory in the so-called Yom Kippur War. In spite of peace treaties, hostilities did not cease and in 1982 the conflict moved to the Lebanon. This book traces the war in the air between Israel and its Arab neighbours during these troubled years.

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