TRANSWORLD BOOKS

The Fist of God

Frederick Forsyth

About the Book

During those fateful weeks before Saddam Hussein's invasion of Kuwait, a fragment of radio intercept had referred to Qubth-ut-Allah, a devastating secret weapon that could rain death and destruction on the Allied forces.

Despite Allied scepticism, Major Mike Martin, an SAS man who can pass as an Arab, is sent into Kuwait to assess Iraqi strength and help the resistance. What he discovers there takes him to the heart of Baghdad, where he is to 'run' the Iraqi spy known as Jericho, the sleeper who might be prepared to provide vital information for money. It is a highly dangerous operation, the results of which cause the Allies to delay their ground assault for four days - while Martin parachutes into the Iraqi mountains on the most hazardous mission of his life: to find and destroy the Qubth-ut-Allah - the Fist of God.

Not until you read *The Fist of God* will you realise why Saddam Hussein thought he could win the Gulf War and so refused to pull out of Kuwait.

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The Fist of God

Frederick Forsyth

For the widows and orphans of the
Special Air Service Regiment.

And for Sandy, without whose support this would have been so much harder.

To those who know what really happened in
the Gulf, and who spoke to me about it;
my sincere thanks.
You know who you are;
let it be.

Cast of Principal Characters

THE BRITISH

MARGARET THATCHER	Prime Minister
JOHN MAJOR	Thatcher's successor as Prime Minister
LIEUTENANT-GENERAL SIR PETER DE LA BILLIÈRE	Commander, British Forces, Gulf Theatre
SIR COLIN MCOLL	Chief, SIS
SIR PAUL SPRUCE	Chairman, British Medusa Committee
BRIGADIER J. P. LOVAT	Director, Special Forces
COLONEL BRUCE CRAIG	Commanding Officer, 22nd SAS Regiment
MAJOR MIKE MARTIN	Major, SAS
MAJOR 'SPARKY' LOW	SAS Officer, Khafji
DR TERRY MARTIN	Academic and Arabist
STEVE LAING	Director of Operations, Mid-East Division, SIS
SIMON PAXMAN	Head of Iraq Desk, SIS
STUART HARRIS	British businessman, Baghdad
JULIAN GRAY	Head of Station, SIS, Riyadh
DR BRYANT	Bacteriologist, Medusa Committee
DR REINHART	Poison gas expert, Medusa Committee
DR JOHN HIPWELL	Nuclear expert, Medusa Committee

SEAN PLUMMER	Head of Arab Services, GCHQ
WING COMMANDER PHILIP CURZON	Commanding Officer, 608th Squadron, RAF
SQUADRON LEADER LOFTY WILLIAMSON	Pilot, 608th Squadron, RAF
FLIGHT LIEUTENANT SID BLAIR	Williamson's navigator
FLIGHT LIEUTENANT PETER JOHNS	Pilot, 608th Squadron, RAF
FLIGHT LIEUTENANT NICKY TYNE	Johns's navigator
SERGEANT PETER STEPHENSON	SAS man
CORPORAL BEN EASTMAN	SAS man
CORPORAL KEVIN NORTH	SAS man

THE AMERICANS

GEORGE BUSH	President
JAMES BAKER	Secretary of State
COLIN POWELL	Chairman, Joint Chiefs of Staff
GENERAL NORMAN SCHWARZKOPF	IC Coalition Forces, Gulf Theatre
LIEUTENANT-GENERAL CHARLES (CHUCK) HORNER	IC Coalition Air Forces, Gulf Theatre
BRIGADIER-GENERAL BUSTER GLOSSON	Deputy to Chuck Horner
BILL STEWART	Deputy Director (Operations), CIA
CHIP BARBER	Head, Middle East Division, CIA
WILLIAM WEBSTER	Director of Central Intelligence, CIA
DON WALKER	USAF fighter pilot
STEVE TURNER	USAF fighter squadron commander
RANDY ROBERTS	Wingman to Don Walker
JIM HENRY	Wizzo to Randy Roberts

HARRY SINCLAIR	Head of London Station, CIA
SAUL NATHANSON	Banker and philanthropist
'DADDY' LOMAX	Retired nuclear physicist

THE ISRAELIS

GENERAL YAACOV 'KOBI' DROR	Head of Mossad
SAMI GERSHON	Head, Combatants Division, Mossad
DAVID SHARON	Head of Iraq Desk, Mossad
BENJAMIN NETANYAHU	Deputy Foreign Minister
ITZHAK SHAMIR	Prime Minister
GIDEON 'GIDI' BARZILAI	Mission controller, Operation Joshua
MOSHE HADARI	Arabist, Tel Aviv University
AVI HERZOG, ALIAS KARIM AZIZ	Mossad agent in Vienna

THE VIENNESE

WOLFGANG GEMÜTLICH	Vice-president, the Winkler Bank
EDITH HARDENBERG	Gemütlich's private secretary

THE KUWAITIS

AHMED AL-KHALIFA	Merchant
COLONEL ABU FOUAD	Resistance movement
ASRAR QABANDI	Heroine of resistance

THE IRAQIS

SADDAM HUSSEIN	President
IZZAT IBRAHIM	Deputy President
HUSSEIN KAMIL	Saddam's son-in-law, Head of MIMI (Ministry of Industry & Military Industrialization)
TAHA RAMADAM	Prime Minister
SADOUN HAMMADI	Deputy Premier
TARIQ AZIZ	Foreign Minister
ALI HASSAN MAJID	Governor-General, occupied Kuwait
GENERAL SAADI TUMAH ABBAS	Commander, Republican Guard
GENERAL ALI MUSULI	Commander, Engineering Corps
GENERAL ABDULLAH KADIRI	Commander, Armoured Corps
DR AMER SAADI	Deputy to Hussein Kamil
BRIGADIER HASSAN RAHMANI	Chief, Counter-Intelligence
DR ISMAIL UBAIDI	Chief, Foreign Espionage
BRIGADIER OMAR KHATIB	Chief, Secret Police (Amn-al-Amm)
COLONEL OSMAN BADRI	Colonel, Army Engineers
COLONEL ABDELKARIM BADRI	Colonel, Iraqi Air Force (fighter pilot)
DR JAAFAR AL-JAAFAR	Head, nuclear programme
COLONEL SABAAWI	Secret Police Chief, occupied Kuwait
DR SALAH SIDDIQUI	Nuclear engineer

Chapter One

The man with ten minutes to live was laughing.

The source of his amusement was a story just told him by his personal aide, Monique Jaminé, who was driving him home that chill, drizzling evening of 22 March 1990 from his office to his apartment.

It concerned a mutual colleague in the offices of the Space Research Corporation at rue de Stalle, a woman regarded as a real vamp, a man-eater, who had turned out to be gay. The deception appealed to the man's lavatorial sense of humour.

The pair had left the offices in the Brussels suburb of Uccle at ten to seven, Monique driving the Renault 21 estate. She had, some months earlier, sold her employer's own Volkswagen because he was such a rotten driver she feared he would end by killing himself.

It was only a ten-minute drive from the offices to his apartment in the centre block of the three-building Cheridreu complex off rue François Folie, but they stopped halfway at a baker's shop. Both went inside, he to buy a loaf of his favourite *pain de campagne.* There was rain in the wind; they bowed their heads, failing to notice the car that followed behind them.

Nothing strange in that. Neither was trained in tradecraft; the unmarked car with its two dark-jowled occupants had been following the scientist for weeks, never losing him, never approaching, just watching; and he had not seen it. Others had, but he did not know.

Emerging from the shop just in front of the cemetery, he tossed his loaf into the back seat and climbed aboard to

complete the journey to his home. At ten minutes after seven Monique drew up in front of the plate-glass doors of the apartment block, set 15 metres back off the street. She offered to come up with him, to see him home, but he declined. She knew he would be expecting his girl-friend Helene and he did not wish them to meet. It was one of his vanities, in which his adoring female staff indulged him, that Helene was just a good friend, keeping him company while he was in Brussels and his wife in Canada.

He climbed out of the car, the collar of his belted trenchcoat turned up as ever, and hefted onto his shoulder the big black canvas bag that hardly ever left him. It weighed over fifteen kilograms and contained a mass of papers, scientific papers, projects, calculations and data. The scientist distrusted safes and thought illogically that all the details of his latest projects were safer hanging from his shoulder.

The last Monique saw of her employer, he was standing in front of the glass doors, his bag over one shoulder, loaf under the other arm, fumbling for his keys. She watched him go through the doors, and the self-locking plate glass swing closed behind him. Then she drove off.

The academic lived on the sixth of the eight-floor block. The two elevators ran up the back wall of the building, encircled by the stairs with a fire-door on each landing. He took the lift and stepped out at the sixth floor. The dim, floor-level lights of the lobby came on automatically as he did so. Still jangling his keys, leaning against the weight of his bag and clutching his loaf, he turned left and left again across the russet-brown carpet and tried to get his key into the lock of his apartment door.

The killer had been waiting on the other side of the lift-well which jutted into the dimly lit lobby. He came quietly round the lift-shaft holding his silenced 7.65-mm Beretta automatic, which was wrapped in a plastic bag to prevent the ejected cartridges spilling all over the carpet.

Five shots, fired from less than a metre range, all into the back of the head and neck, were more than enough. The big, burly man slumped forward against his door and slithered to the carpet. The gunman did not bother to check; there was no need. He had done this before, practising on prisoners, and knew his work was done. He ran lightly down the six levels of stairs, out of the back of the building, across the tree-studded gardens and into the waiting car. In an hour he was inside his country's embassy, in a day out of Belgium.

Helene arrived five minutes later. At first she thought her lover had had a heart attack. In a panic she let herself in and called the paramedics. Later she realized her friend's own doctor lived in the same block and summoned him as well. The paramedics arrived first.

One of them tried to shift the heavy body, still facing downwards. The man's hand came away covered in blood. Minutes later he and the doctor had pronounced the victim quite dead. The only other occupant of the four flats on that floor came to her door, an elderly lady who had been listening to a classical concert and heard nothing behind her solid timber door. Cheridreu was that kind of block, very discreet.

The man on the floor was Dr Gerald Vincent Bull, wayward genius, gun designer to the world and more latterly armourer for Saddam Hussein of Iraq.

In the aftermath of the murder of Dr Gerry Bull some strange things began to happen all over Europe. In Brussels Belgian Counter-Intelligence admitted that for some months he had been followed on an almost daily basis by a series of unmarked cars containing two men of swarthy East Mediterranean appearance.

On 11 April British Customs officers seized on the docks of Middlesbrough eight sections of huge steel pipes, beautifully forged and milled and able to be assembled by giant flanges

at each end, drilled to take powerful nuts and bolts. Triumphant officers announced that these tubes were not for a petrochemical plant as specified on the bills of lading and the export certificates but were parts of a great gun barrel designed by Gerry Bull and destined for Iraq. The farce of the Supergun was born, and it would run and run, revealing double-dealing, the stealthy paws of several Intelligence agencies, a mass of bureaucratic ineptitude and some political chicanery.

Within weeks bits of Supergun began popping up all over Europe. On 23 April Turkey announced it had stopped a Hungarian truck carrying a single ten-metre steel tube for Iraq, believed to be part of the gun. The same day Greek officials seized another truck with steel parts and held the hapless British driver for several weeks as an accomplice.

In May the Italians intercepted 75 tons of parts made by Società della Fucine, and a further 15 tons of parts were confiscated at the Fucine works near Rome. The latter were of a titanium steel alloy and destined to be part of the breech of the gun, as were more bits and pieces yielded by a warehouse at Brescia in northern Italy.

The Germans came in, with discoveries at Frankfurt and Bremerhaven, manufactured by Mannesmann AG, also identified as parts of the by now world-famous Supergun.

In fact Gerry Bull had placed the orders for his brainchild skilfully and well. The tubes forming the barrels were indeed made in England by two firms, Walter Somers of Birmingham and Sheffield Forgemasters. But the eight intercepted in April 1990 were the last of fifty-two sections, enough to make two complete barrels 156 metres long and with an unbelievable 1-metre calibre, capable of firing a projectile the size of a cylindrical telephone booth.

The trunnions or supports came from Greece, the pipes, pumps and valves that formed the recoil mechanism from Switzerland and Italy, the breech block from Austria and Germany, the propellant from Belgium. In all, seven

countries were involved as contractors and none knew quite what they were making.

The popular Press had a field-day as did the exultant Customs officers and the British legal system which began eagerly prosecuting any innocent party involved. What no-one pointed out was that the horse had bolted. The intercepted parts constituted Superguns Two, Three and Four.

As for the killing of Gerry Bull, it produced some weird theories in the media. Predictably, the CIA was nominated by the CIA-is-responsible-for-everything brigade. This was another nonsense. Although Langley has, in the past and under certain circumstances, countenanced the elimination of certain parties, they have almost always been in the same business – contract officers turned sour, renegades and double-agents. The notion that the lobby at Langley is rather choked with the corpses of former agents gunned down by their own colleagues at the behest of genocidal directors on the top floor is amusing but wholly unreal.

Moreover Gerry Bull was not from that back-alley world. He was a well-known scientist, designer and contractor of artillery, conventional and very unconventional, an American citizen who had once worked for America for years and talked copiously to his American army friends about what he was up to. If every designer and industrialist in the weapons industry working for a country not (at that time) seen to be an enemy of America was to be ‘wasted’, some five hundred gentlemen across North and South America and Europe would have to qualify.

Finally, Langley has for at least the past ten years become grid-locked by the new bureaucracy of controls and oversight committees. No professional Intelligence officer is going to order a ‘hit’ without a written and signed order. For a man like Gerry Bull that signature would have to come from the Director of Central Intelligence himself.

The DCI at that time was William Webster, a by-the-book former judge from Kansas. It would be about as easy to get a signed ‘hit’ authority out of William Webster as to burrow a way out of Marion Penitentiary with a blunt teaspoon.

But far and away the league leader in the who-killed-Gerry-Bull enigma was of course the Israeli Mossad. The entire Press and most of Bull’s friends and family jumped to the same conclusion. Bull was working for Iraq; Iraq was the enemy of Israel. Two and two equal four. The trouble is, in that world of shadows and distorting mirrors what may or may not appear to be two, when multiplied by a factor that may or may not be two, could possibly come out at four but probably will not.

The Mossad is the world’s smallest, most ruthless and most gung-ho of the leading Intelligence agencies. It has in the past undoubtedly undertaken many assassinations, using one of the three ‘kidon’ teams – the word is the Hebrew for bayonet. The kidonim come under the Combatants or Komemiute Division, the deep-cover men, the hard squad. But even the Mossad has its rules, albeit self-imposed.

Terminations fall into two categories. One is ‘operational requirement’, an unforeseen emergency in which an operation involving friendly lives is put at risk and the person in the way has to be eased out of the way, fast and permanently. In these cases the supervising katsa or case officer has the right to ‘waste’ the opponent jeopardizing the entire mission and will get retroactive support from his bosses back in Tel Aviv.

The other category is for those already on the execution list. This list exists in two places: the private safe of the Prime Minister and the safe of the Head of Mossad. Every incoming Prime Minister is required to see this list, which may contain between thirty and eighty names. He may either initial each name, giving the Mossad the go-ahead on an ‘if-and-when’ basis, or insist on being consulted before

each new mission. In either event, he must sign the execution order.

Broadly speaking, those on the list fall into three classes. There are the few remaining top Nazis, though this class has almost ceased to exist. Years ago, although Israel mounted a major operation to kidnap and try Adolf Eichmann because it wanted to make an international example of him, other Nazis were simply liquidated quietly. Class two are almost all contemporary terrorists, mainly Arabs who have already shed Israeli or Jewish blood like Ahmed Jibril, Abu Nidal, or who would like to, with a few non-Arabs thrown in.

Category three, which might have contained the name of Gerry Bull, are those working for Israel's enemies and whose work carries great danger for Israel and her citizens if it progresses any further.

The common denominator is that those targeted must have blood on their hands, either in fact or in prospect.

If a hit is requested, the Prime Minister will pass the matter to a judicial investigator so secret few Israeli jurists and no citizens have ever heard of him. The investigator holds a 'court' with the charge read out, a prosecutor and a defender. If Mossad's request is confirmed, the matter goes back to the Prime Minister for his signature. The kidon team does the rest . . . if it can.

The problem with the Mossad-killed-Bull theory is that it is flawed at almost every level. True, Bull *was* working for Saddam Hussein, designing new conventional artillery (which could not reach Israel), a rocket programme (which might one day) and a giant gun (which did not worry Israel at all). But so were hundreds of others. Half a dozen German firms were behind Iraq's hideous poison gas industry, with whose products Saddam had already threatened Israel. Germans and Brazilians were working flat out on the rockets of Saad 16. The French were the prime movers and suppliers of the Iraqi research for a nuclear bomb.

That Bull, his ideas, his designs, his activities and his progress deeply interested Israel there is no doubt. In the aftermath of his death much was made of the fact that in preceding months he had been worried by repeated covert entries into his flat while he was away. Nothing was ever taken, but traces were left. Glasses were moved and replaced; windows left open; a video tape rewound and removed from the player. Was he being warned, he wondered, and was the Mossad behind it all? He was and they were, but for a less-than-obvious reason.

In the aftermath, the swarthy strangers with the guttural accents who tailed him all over Brussels were identified by the media as the Israeli assassins preparing their moment. Unfortunately for the theory, Mossad agents do not run around looking and acting like Pancho Villa. They were there, all right, but nobody saw them; not Bull, not his friends or family, not the Belgian police. They were there in Brussels with a team who could look like and pass for Europeans – Belgians, Americans, whatever they chose. It was they who tipped off the Belgians that Bull was being followed by *another* team.

Moreover, Gerry Bull was a man of extraordinary indiscretion. He simply could not resist a challenge. He had worked for Israel before, liked the country and the people, had many friends in the Israeli army and could not keep his mouth shut. Challenged with a phrase like: ‘Gerry, I bet you’ll never get those rockets at Saad 16 to work . . .’ Bull would leap into a three-hour monologue describing exactly what he was doing, how far the project had got, what were the problems, how he hoped to solve them . . . the lot. For an Intelligence service he was a dream of indiscretion. Even in the last week of his life he was entertaining two Israeli generals at his office, giving them a complete up-to-the-minute picture, all tape-recorded by the devices in their briefcases. Why destroy such a cornucopia of inside information?

Finally, the Mossad has one other habit when dealing with a scientist or industrialist, but never with a terrorist. A final warning is always given; not a weird burglary aimed at moving glasses or rewinding video tapes, but a real verbal warning. Even with Dr Yahia El Meshad, the Egyptian nuclear physicist working on the first Iraqi nuclear reactor who was assassinated in his hotel room at the Meridien, Paris on 13 June 1980, the procedure was observed. An Arabic-speaking katsa went to his room and told him bluntly what would happen to him if he did not desist. The Egyptian told the stranger at his door to get lost – not a wise move. Telling a Mossad kidon team to perform an impractical act upon themselves is not a tactic approved by the insurance industry. Two hours later Meshad was dead. But he had had his chance. A year later the whole French-supplied nuclear complex at Osirak One and Two was blown away by an Israeli air strike.

Bull was different – a Canadian-born American citizen, genial, approachable and a whisky drinker of awesome talent. The Israelis could talk to him as a friend, and did constantly. It would have been the easiest thing in the world to send a friend to tell him bluntly that he had got to stop or the hard squad would come after him – nothing personal, Gerry, just the way things are.

Bull was not in the business of winning a posthumous Congressional Medal. Moreover he had already told the Israelis and his close friend George Wong that he wanted out of Iraq – physically and contractually. He had had enough. What happened to Dr Gerry Bull was something quite different.

Gerald Vincent Bull was born in 1928 at North Bay, Ontario. At school he was clever and driven by an urge to succeed and earn the world’s approval. At sixteen he could graduate but because he was so young the only college that would accept such a youngster was the University of Toronto,

Engineering Faculty. Here he showed he was not just clever, but brilliant. At twenty-two he became the youngest-ever PhD. It was aeronautical engineering that seized his imagination and specifically ballistics – the study of bodies, whether projectiles or rockets, in flight. It was this that led down the road to artillery.

After Toronto he joined the Canadian Armament and Research Development Establishment, CARDE, at Valcartier, a then quiet little township outside Quebec. In the early 1950s Man was turning his face not only towards the skies but beyond them to space itself. The buzzword was ‘rockets’. It was then that Bull showed he was something else apart from technically brilliant. He was a maverick – inventive, unconventional, and imaginative. It was during his ten years at CARDE that he developed the idea which would become his living dream for the rest of his days.

Like all new ideas Bull’s appeared quite simple. When he looked at the emerging range of American rockets in the late 1950s he realized that nine-tenths of these then impressive-looking rockets were only the first stage. Sitting right on top, only a fraction of the size, were the second and third stages and, even smaller, the tiny nipple of the payload.

The giant first stage was to lift the rocket up through the first 150 kilometres of air, where the atmosphere was thickest and gravity strongest. After the 150-km mark it needed much less power to drive the satellite on into space itself and orbit at between 400 and 500 kilometres above the earth. Every time a rocket went up, the whole of that bulky and very expensive first stage was destroyed – burnt out, to fall for ever into the oceans.

Supposing, Bull mused, you could punch your second and third stages, plus the payload, up those first 150 kilometres from the barrel of a giant gun? In theory, he pleaded with the money men, it was possible, easier, cheaper and the gun could be used over and over again.

It was his first real brush with politicians and bureaucrats, and he failed, mainly because of his personality. He hated them and they hated him.

In 1961 he got lucky. McGill University came in because it foresaw some interesting publicity. The US army came in for reasons of its own; guardian of American artillery, the Army was in a power play with the Air Force which was battling for control over all rockets or projectiles going above 100 kilometres. With their combined funds Bull was able to set up a small research establishment on the island of Barbados. The US army let him have a package of one out-of-storage 16-inch navy gun (the biggest calibre in the world), one spare barrel, one small radar tracking unit, a crane and some trucks. McGill set up a metal workshop. It was like trying to take on the Grand Prix racing industry with the facilities of a backstreet garage. But he did it; his career of amazing inventions had begun and he was thirty-three years old; shy, diffident, untidy, inventive and still a maverick.

He called his research in Barbados the High Altitude Research Project, or HARP. The old navy gun was duly erected and Bull began work on projectiles. He called them Martlet after the heraldic bird that appears on the insignia of McGill University.

Bull wanted to put a payload of instruments into earth orbit cheaper and faster than anyone else. He knew perfectly well that no human could withstand the pressures of being fired from a gun, but reckoned rightly that in the future 90 per cent of scientific research and work in space would be done by machines, not men. America under Kennedy and goaded by the flight of the Russian Gagarin pursued from Cape Canaveral the more glamorous but ultimately rather pointless exercise of putting mice, dogs, monkeys and eventually men up there.

Down in Barbados Bull soldiered on with his single gun and his Martlet projectiles. In 1964 he blew a Martlet 92

kilometres high, then added an extra 16 metres of barrel to his gun (it cost just $41,000), making the new 36-metre barrel the longest in the world. With this he reached the magic 150 kilometres with a 180-kilogram payload.

He solved the problems as they arose. A major one was the propellant. In a small gun the charge gives the projectile a single hard smack as it expands from solid to gas in a microsecond. The gas tries to escape its compression and has nowhere to go but out of the barrel, pushing the shell ahead of it as it does so. But with a barrel as long as Bull's, a special, slower-burning propellant was needed not to split the barrel wide open. He needed a powder that would send his projectile up this enormous barrel in a long, steadily accelerating 'whoosh'. So he designed it.

He also knew that no instruments could withstand the 10,000 gravity force caused by the explosion of even the slower-burning propellant charge; so he designed a shock-absorber system to reduce it to 200 gravities. A third problem was the recoil. This was no pop-gun and the recoil would be enormous as the barrels, charges and payloads got bigger. So he designed a system of springs and valves to reduce it to acceptable proportions.

In 1966 Bull's old adversaries among the Canadian Defence Ministry bureaucrats got him by urging their minister to pull the finance. Bull protested that he could put a payload of instruments into space for a fraction of what it cost Cape Canaveral. To no avail. To protect its interest the US army transferred Bull from Barbados to Yuma, Arizona.

Here in November of that year he put a payload 180 kilometres up, a record that stood for twenty-five years. But in 1967 Canada pulled out completely, both the Government and McGill University. The US army followed suit. The HARP project closed down. Bull set himself up in a purely consultative basis at Highwater, an estate he had bought straddling the border of North Vermont and his native Canada.

There were two postscripts to the HARP affair. By 1990 it was costing $10,000 to put every kilogram of instruments into space with the Space Shuttle programme out of Cape Canaveral. To his dying day Bull knew he could do it for $600 per kilo. And in 1988 work began on a new project at Lawrence Livermore National Laboratory, California. The project involves a giant gun but so far with a barrel only 4 inches in calibre and a barrel only 50 metres long. Eventually, and at a cost of hundreds of millions of dollars, it is hoped to build a much, much bigger one with a view to firing payloads into space. The project's name is Super-High Altitude Research Project, or SHARP.

Gerry Bull lived in and ran his complex at Highwater on the border for ten years. In that time he dropped his unfulfilled dream of a gun that would fire payloads into space and concentrated on his second area of expertise – the more profitable one of conventional artillery.

He began with the major problem – almost all the world's armies based their artillery part on the universal 155-mm howitzer field gun. He knew that in an artillery exchange the man with the longer range is king. He can sit back and blow the enemy away while remaining inviolate. Bull determined to extend the range and increase the accuracy of the 155-mm field gun. He started with the ammunition. It had been tried before but no-one had succeeded. In four years Bull cracked it.

In control tests the Bull shell went one and a half times the distance from the same 155 standard gun, was more accurate and exploded with the same force into 4,700 fragments as opposed to 1,350 for a NATO shell. NATO was not interested. By the grace of God, neither was the Soviet Union.

Undeterred, Bull ploughed on, producing a new full-bore extended-range shell. Still NATO was not interested, preferring to stay with their traditional suppliers and the short-range shell.

But if the Powers would not look, the rest of the world did. Military delegations swarmed to Highwater to consult Gerry Bull. They included Israel (which was when he cemented friendships begun with observers in Barbados), Egypt, Venezuela, Chile and Iran. He also gave consultancies on other artillery matters to Britain, Holland, Italy, Canada and America, whose military scientists (if not the Pentagon) continued to study with some awe what he was up to.

In 1972 Bull was quietly made a US citizen. The next year he began work on the actual 155-calibre field gun itself. Within two years he had made another breakthrough, discovering that the perfect length for a cannon barrel was neither more nor less than forty-five times its calibre. He perfected a new redesign of the standard 155 field gun and called it the GC (for Gun Calibre)-45. The new gun, with his extended-range shells, would outgun any artillery in the entire Communist arsenal. But if he expected contracts he was disappointed. Again the Pentagon stayed with the gun lobby and its new idea for rocket-assisted shells at eight times the price per shell. The performance of both shells was identical.

Bull’s fall from grace, when it came, started innocently enough when he was invited with CIA connivance to help improve the artillery and shells of South Africa, then fighting the Moscow-backed Cubans in Angola.

Bull was nothing if not politically naïve to an amazing degree. He went, found he liked the South Africans and got on well with them. The fact that South Africa was an international outcast for its apartheid policies did not worry him. He helped them redesign their artillery park along the lines of his increasingly sought-after GC-45 long-barrelled, long-range howitzer. Later the South Africans produced their own version and it was these cannon that smashed the Soviet artillery, rolling back the Russians and Cubans.

Returning to America, Bull continued to ship his shells. President Jimmy Carter had come to power and political

correctness was the new order. Bull was arrested and charged with illegal exports to a forbidden regime. The CIA dropped him like a hot potato. He was persuaded to stay silent and plead guilty. It was a formality, he was told; he would get a slap on the wrist for a technical breach, they said.

On 16 June 1980 a US judge sentenced him to a year in prison, with six months suspended, and a fine of $105,000. He actually served four months and seventeen days at Allenwood Jail, Pennsylvania. But for Bull that was not the point.

It was the shame and the disgrace that got to him, plus the sense of betrayal. How could they do this to him he reasoned. He had helped America wherever he could, taken her citizenship, gone along with the CIA appeal of 1976. While he was in Allenwood his company SRC went bankrupt and closed down. He was ruined.

On emerging from jail he quit America and Canada for ever, emigrating to Brussels, starting again in a one-room walk-up with a kitchenette. Friends said later he was changed after the trial and never the same man again. He never forgave the CIA and he never forgave America; and yet he struggled for years for a rehearing and a pardon.

He returned to consultancy and took up an offer made to him before his trial – to work for China on the improvement of their artillery. Through the early and mid-eighties Bull worked mainly for Beijing and redesigned their artillery park along the lines of his GC-45 cannon, now being sold under world licence by Voest-Alpine of Austria, who had bought the patents from Bull for a one-off payment of two million dollars. Bull always was a terrible businessman, or he would have been a multimillionaire.

While Bull had been away, things had happened. The South Africans had taken Bull’s designs and improved greatly upon them, creating a towed howitzer called the G-5 from his GC-45 and a self-propelled cannon, the G-6. Both

had a range with extended shells of forty kilometres. South Africa was selling them round the world. Because of his poor deal with the South Africans, Bull got not a penny in royalties.

Among clients for these guns was a certain Saddam Hussein of Iraq. It was these cannon that broke the human waves of Iranian fanatics in the eight-year Iran–Iraq war, finally defeating them in the Fao marshes. But Saddam Hussein had added a new twist, especially at the battle of Fao. He had put poison gas in the shells.

Bull then worked for Spain and Yugoslavia, converting the old Yugoslav army's Soviet-made 130-mm artillery to the new 155-mm cannon with the extended-range shells. Though he would never live to see it, these were the guns inherited by the Serbs on the collapse of Yugoslavia to pulverize the cities of the Croats and Muslims in the civil war. In 1987 he learnt that America would, after all, research the payloads-into-space cannon but with Gerry Bull firmly cut out of the deal.

That winter he received a strange phone call from the Iraqi Embassy in Bonn. Would Dr Bull like to visit Baghdad as Iraq's guest?

What he did not know was that in the mid-Eighties Iraq had witnessed 'Operation Staunch', a concerted American effort to shut off all sources of weapons imports destined for Iran. This followed the carnage among American marines in Beirut in an Iranian-backed attack on their barracks by Hezbollah fanatics.

Iraq's reaction, although they benefited in their war with Iran from Operation Staunch, was if they can do that to Iran, they can do it to us. From then on Iraq determined to import not the arms, but wherever possible the technology to make their own. Bull was first and foremost a designer; he interested them.

The mission to recruit him went to Amer Saadi, Number Two at the Ministry of Industry and Military Industrialization,

known as MIMI. When Bull arrived in Baghdad in January 1988, Amer Saadi, a smooth cosmopolitan diplomat/scientist speaking English, French and German besides Arabic, played him beautifully.

Iraq, he said, wanted Bull's help with their dream to put peaceful satellites into space. To do this they had to design a rocket that could put the payload up there. Their Egyptian and Brazilian scientists had suggested the first stage would be to tie together five of the Scud missiles of which Iraq had bought 900 from the Soviet Union. But there were technical problems, many problems. They needed access to a supercomputer. Could Bull help them?

Bull loved problems, they were his *raison d'être*. He did not have access to a supercomputer, but on two legs he was the nearest thing. Besides, if Iraq really wanted to be the first Arab nation to put satellites into space, there was another way . . . cheaper, simpler, faster than rockets starting from scratch. Tell me all, said the Iraqi. So Bull did.

For just three million dollars, he said, he could produce a giant gun that would do the job. It would be a five-year programme. He could beat the Americans at Livermore to the punch. It would be an Arab triumph. Dr Saadi glowed with admiration. He would put the idea to his government and recommend it strongly. In the meanwhile, would Dr Bull look at the Iraqi artillery?

By the end of his one-week visit Bull had agreed to crack the problems of tying five Scuds together to form the first stage of a rocket of intercontinental or space-reaching performance; to design two new artillery pieces for the Army; and to put a formal proposal for his payload-into-orbit supergun.

As with South Africa, he was able to block his mind to the nature of the regime he was about to serve. Friends had told him of Saddam Hussein's record as the man with the bloodiest hands in the Middle East. But in 1988 there were thousands of respectable companies and dozens of

governments clamouring to do business with big-spending Iraq.

For Bull the bait was his gun, his beloved gun, his life's dream, at last with a backer prepared to help him bring it to fulfilment and join the pantheon of scientists.

In March 1988 Amer Saadi sent a diplomat to Brussels to talk to Bull. Yes, said the gun designer, he had made progress on the technical problems of the first stage of the Iraqi rocket. He would be glad to hand them over on signature of a contract with his company, once again the Space Research Corporation. The deal was done. Iraq realized his offer of a gun for three million dollars was silly; they raised it to ten million but asked for more speed.

When Bull worked fast he worked amazingly fast. In one month he put together a team of the best available freelancers he could find. Heading the supergun team in Iraq was a British projects engineer called Christopher Cowley. Bull himself christened the rocket programme based at Saad 16 in northern Iraq Project Bird. The supergun task was named Project Babylon.

By May the exact specifications of Babylon had been worked out. It would be an incredible machine. One metre of bore; a barrel 156 metres long and weighing 1,665 tons – that is more than twice the height of Nelson's Column in London, the height of the Washington Monument. Four recoil cyclinders weighing 60 tons each and two buffer cylinders at 7 tons. The breech would weigh 182 tons.

The steel had to be special, withstanding 70,000 pounds per square inch of internal pressure and with a tensile strength of 1,250 Mega Pascals.

Bull had already made plain to Baghdad that he would have to make a smaller prototype, a Mini-Babylon with 350-mm bore weighing only 113 tons, but in this he could test nose cones which would also be useful for the rocket project. The Iraqis liked this – they needed nose cone technology as well.

The full significance of the insatiable Iraqi appetite for nose cone technology seems to have escaped Gerry Bull at the time. Maybe, in his limitless enthusiasm to see his life's dream realized at last, he just suppressed it. Nose cones of very advanced design are needed to prevent a payload burning up from friction heat as it re-enters earth's atmosphere. But orbiting payloads in space do not return; they stay up there.

By late May 1988 Christopher Cowley was placing his first orders with Walter Somers of Birmingham for the tube sections that would make up the barrel of Mini-Babylon. The sections for full-scale Babylons One, Two, Three and Four would come later. Other strange steel orders were placed all around Europe.

The pace at which Bull was working was awesome. In two months he had covered ground that would have taken a government enterprise two years. By the end of 1988 he had designed for Iraq two new guns – self-propelled guns as opposed to the towed machines supplied by South Africa. Both pieces would be so powerful they could crush the guns of the surrounding nations of Iran, Turkey, Jordan and Saudi Arabia, who purchased from NATO and America.

Bull also managed to crack the problems of tying the five Scuds together to form the first stage of the Bird rocket, to be called Al-Abeid, the Believer. He had discovered the Iraqis and Brazilians at Saad 16 were working on faulty data produced by a wind tunnel that was itself malfunctioning. After that he handed over his fresh calculations and left the Brazilians to get on with it.

In May 1989 most of the world's armaments industry and Press, along with government observers and Intelligence officers, attended a great weapons exhibition in Baghdad. Considerable interest was shown in the mock-up prototypes of the two great guns. In December the Al-Abeid was test-fired to great media hoop-la and seriously jolted Western analysts.

Heavily covered by Iraqi TV cameras the great three-stage rocket roared off from the Al-Anbar Space Research Base, climbed away from the earth and disappeared. Three days later Washington admitted that the rocket did indeed appear capable of putting a satellite into space.

But the analysts worked out more. If Al-Abeid could do that, it could also be an intercontinental ballistic missile. Suddenly Western Intelligence agencies were jerked out of their assumption that Saddam Hussein was no real danger, years away from being a serious threat.

The three main agencies, CIA in America, SIS in Britain and Mossad in Israel, came to the view that of the two systems the Babylon gun was an amusing toy and the Bird rocket a real threat. All three got it wrong. It was the Al-Abeid that did not work.

Bull knew why and he told the Israelis what happened. The Al-Abeid soared to 12,000 metres and was lost to view. The second stage refused to separate from the first. The third stage did not exist. It was a dummy. He knew because he had been charged with trying to persuade China to provide a third stage and would be going to Beijing in February.

He did indeed go, and the Chinese turned him down flat. While he was there he met and talked lengthily with his old friend George Wong. Something had gone wrong with the Iraqi business, something that was worrying the hell out of Gerry Bull, and it was not the Israelis. Several times he insisted he wanted ‘out’ of Iraq, and in a hurry. Something had happened, inside his own head, and he wanted out of Iraq. In this decision he was entirely right, but too late.

On 15 February 1990 President Saddam Hussein called a full meeting of his group of inner advisers at his palace at Sarseng, high up in the Kurdish mountains.

He liked Sarseng. It stands on a hilltop and through its triple-glazed windows he could gaze out and down to the