Powering the Hydrocarbon Revolution, 1939-1973
A History of Royal Dutch Shell, volume 2

Stephen Howarth & Joost Jonker
Volume 2 takes the history of Royal Dutch Shell from the outbreak of the Second World War to the eve of the 1973 oil crisis. Despite serious losses, the company contributed materially to the Allied war effort. The directors also solved the managerial crisis created by Deterding's resignation. This provided the foundation for a radical overhaul of the Group's top management structure, culminating in the celebrated matrix organization. Having repaired its war damage, Royal Dutch Shell expanded very rapidly to keep pace with booming demand. Shell also devoted a large amount of resources to developing petrochemicals as a second core business, which it considered to be the future of the industry. The rise of OPEC inspired Shell to widen its search for oil by pioneering deepwater offshore exploration. At the same time the growing environmental awareness in Western societies posed new challenges of a different kind.

Stephen Howarth is the author or co-author of numerous works of naval and maritime history and of commissioned corporate history. The latter include P&O, Shell Tankers (U.K.) Ltd, "Shell" Transport and Trading plc, Henry Poole & Co., the founders of Savile Row, and the Royal Naval Reserves. He is a Fellow of the Royal Historical Society and in 2003 was appointed an honorary Commander RNR by Her Majesty Queen Elizabeth II.

Joost Jonker specializes in financial and business history, ranging from the 16th century until the present. His publications include a history of Dutch international trading houses and an analysis of the emergence of securities trading at the Amsterdam exchange.
Powering the Hydrocarbon Revolution, 1939-1973 is one of four volumes of the work entitled A History of Royal Dutch Shell, written by a team of four authors associated with Utrecht University, Jan Luiten van Zanden, Stephen Howarth, Joost Jonker and Keetie Sluyterman. It is the result of a research project which was supervised by the Research Institute for History and Culture and coordinated by Joost Dankers.

The other volumes are:

Joost Jonker and Jan Luiten van Zanden
From Challenger to Joint Industry Leader, 1890-1939

Keetie Sluyterman

Jan Luiten van Zanden
Appendices. Figures and Explanations, Collective Bibliography, and Index, including three DVDs
Partly because of this power struggle, Shell in the 1920s was less dynamic than in the period immediately preceding the First World War. Faced with rapidly rising world production, it entered no major new production areas and did not pursue an aggressive sales policy, but instead strove to maintain market share. The culmination came in 1928 when Deterding masterminded the Achnacarry conference, at which the major oil companies agreed to respect each others' respective positions. At the same time, however, the Group made significant forward strides in several other fields. Firstly, the business showed its resilience in the conspicuous ease with which it weathered major blows such as the loss of one-third of its production through nationalization of the oil industry by the Soviet Union in 1918. Secondly, the Group continued to grow, notably in the United States, where Shell Union expanded into a nationwide, integrated oil company. Thirdly, a new marketing style evolved using striking visual designs which simultaneously positioned the highly recognizable Shell pecten as a hallmark for reliable and high-quality products around the world, and as a brand with a distinctive local character in each of the countries served. Fourthly, research graduated from product-testing into more fundamental analyses focused on finding the best processes for making high-quality components from the cheapest crude available. Finally, in 1927 the Group took the momentous decision to diversify into petrochemicals with a view to obtaining technologies deemed vital for the future development of the oil industry. Combined with the progress made by Group research, this diversification produced some key innovations.

Overproduction in the United States following the discovery of huge new fields there pushed the oil industry towards a crisis before the Wall Street crash of 1929 marked the end of the Roaring 1920s. During the ensuing global economic Depression the Group was hit particularly badly in the Dutch East Indies and in its American operations, the latter suffering from a clear overexpansion. Against this, the market stabilization achieved by the Achnacarry agreement helped markedly to dampen the impact of the relentless fall in oil prices. Shell also sought to stem the tide with swingeing staff cuts and with new administrative policies which included comparative cost analyses.

Meanwhile economic nationalism had become an increasingly formidable opponent for the oil industry. Governments around the world took measures ranging in severity from taxation, through the formation of national oil companies and official monopolies, to the outright nationalization of foreign companies, as happened in the Soviet Union. Initially Shell reacted indignant to any such measures. Deterding did great damage to his own public standing with excessive outbursts of rage in specific cases. However, all efforts to take a principled stand of resistance against nationalist policies foundered on the ready availability of oil from rival companies, so gradually the Group adopted a more realistic attitude, trying to get the most out of a given situation by negotiating for as long as possible. This policy failed both in Germany and Mexico, however. After coming to power in 1933, the Nazis took progressive control of the German oil industry, to the extent that by 1938 Shell had effectively lost its subsidiary Rhenania-Ossag, and in that year too Mexico nationalized its oil industry.

The Hitler regime also provided the immediate cause for Deterding's resignation in 1936. His detestation of communism led to a fascination with the New Order in Germany and acrimonious boardroom rows, which persuaded both him and his fellow directors that it was better for him to step down. The selection of his successor showed how fragile the Group's top management structure really was. Conflicting national interests and the majority share of Royal Dutch immediately acquired an importance which they had not possessed before, and the new de facto CEO J. E. F. de Kok needed all his considerable tact to hold the team of managing directors together. More than ever the Group needed a funda-
mental modernization of its management structure, but with Dutch and British managing directors deadlocked this appeared a remote perspective.

The first chapter of this volume shows how, during the Second World War, the managerial conflict escalated, only to be resolved in a compromise which inaugurated a renaissance. Thereafter, armed with a new purpose and conviction, the Group expanded rapidly during the hydrocarbon revolution of the 1950s and 1960s. Chapters 2, 3, and 4 tell this story, moving from exploration and production downstream, via manufacturing and transport to marketing. Chapter 5 relates how the Group pursued a vigorous diversification into petrochemicals and, a little later, also into other business sectors. In Chapter 6, the focus is first on research, which continued to yield valuable new products and processes, though it became gradually more difficult to recoup the high costs involved. The chapter then shows how Shell reacted to the environmental concerns which confronted the petrochemical industry from the 1950s.

Like its companion volumes, and as detailed in the general introduction in Volume 1, this study of Royal Dutch Shell’s history was researched and written with five themes in mind: the geographical spread of operations; the Group’s internal organization; its performance in relation to the competition; innovations; and the role of politics. It has likewise been based on unrestricted access to the available company records, including the minutes and other documents of the CMD and the Conference. Additional research in the archives of the Bank of England, the National Archives in Kew, De Nederlandsche Bank, the Dutch Ministry of Finance and the Beyen papers yielded further vital information. The authors wish to record their gratitude to Mr. C. Fieret at the Dutch Ministry of Finance for his assistance with our research in the department’s records; to Joke van der Hulst for her always kind help with the archives of De Nederlandsche Bank; to Dr. Wim Weenink for giving access to the Beyen papers; and to Hayley Wilding for laying open the Bank of England records to us. Maurits van Oo shared with us his insights about the McKinsey exercise drawn from an interview with Hugh Parker; interviews with former Group employees Bill Bentley, Prof. Dr. Frits Böttcher, Dr. H. J. Kruisinga, and Dr. E. G. G. Werner gave us valuable insights; and at a very late stage, Barbara Gamalski helped us to find additional material at Shell Deutschland. We offer our thanks to them all.
Preparations for war

In November 1934, almost two years after Hitler came to power, the British government asked the Oil Board, an interdepartmental committee set up in 1925 but which had lain dormant since, to draft supply plans for a war against 'a European enemy'. The Board immediately started collecting data on estimates for oil supplies and tankers. The first ripple from this tide reached the Group during 1936, when the oil companies agreed to raise their stocks of products for civilian uses to three months' peacetime use, the British government bearing half the cost of the extra tankage required. In December of that year, the Air Ministry enquired whether the Group would consider building an iso-octane plant in the UK. Just four months earlier the production of this vital component for high-performance aircraft fuel had started at the Pernis plant, near Rotterdam, but the department's officials thought Britain could not 'rely on obtaining supplies of iso-octane from Pernis in the event of an emergency.'

The Group responded a few months later by promising to supply 32,000 tons of iso-octane a year for five years, to be doubled in case of war, from a plant in the UK. Construction of the unit started the following spring at Stanlow and it came on stream in the summer of 1939. The two high-pressure steel reaction vessels at the core of the installation had come from the German Krupp works. By the time the plant came on stream, however, the Air Ministry had substantially increased its projections of the demand for 100-octane aviation fuel and decided to build three additional installations. These plants were to produce iso-octane by a new and untried process, based on dehydrogenating isobutane into isobutylene. At the Ministry's request, Imperial Chemical Industries (ICI), Trinidad Leaseholds Ltd., and the Group formed a joint venture, known as Trimpell, to construct and manage the installations on behalf of the British Government. One plant was sited in the UK, at Heysham in Lancashire, the other two in Trinidad. The particular process which Trimpell pioneered did not become a success, because alkylation, another process for making iso-octane, proved to be far superior. Before the Heysham plant had reached its design capacity, ICI took over some of the premises for making synthetic ammonia.
Japan began the undeclared Second Sino-Japanese War (1937-45) by invading North China. Below, anxious Chinese people are seen watching a battle between Japanese bombers and Chinese fighter planes in 1938. As the conflict escalated, western governments began to fear the possibility of Japanese military action elsewhere, and (bottom) America stockpiled ammunition at Pearl Harbor in Hawaii.

against China in 1937 and rapidly conquered large parts of that country, the western governments began to worry in earnest about the likelihood of military action against other countries. Economic sanctions were considered, including an embargo on oil supplies, but postponed for the time being as likely to push Japan into securing her supplies by attacking the Dutch East Indies. As a precautionary measure, however, the State Department and the Foreign Office asked the owners of the worldwide hydrogenation patents, including the Group, to deny Japan access to this technology for making oil from coal. When the United States imposed an embargo on the export of high-octane aviation fuel to Japan, the Japanese government began to put pressure on the Dutch government to increase oil supplies from the Dutch East Indies, including 100-octane gasoline, which the Group had just started manufacturing at its Pladju installation. In August 1940, talks opened in Batavia between a Japanese delegation and representatives from the Dutch colonial government, assisted by senior oil company managers. Van Eck attended for the Group, Fred Kay for Stanvac, and Agnew arrived in the US to represent the Group’s position in the heated policy debate there concerning Japan: whether to continue supplying a country with hostile intentions in Asia and a potential enemy, or whether to provoke war by cutting supplies. In a subtle move designed to show resolution with understated force, Washington ordered its Pacific fleet, engaged in exercises around Hawaii, not to return to its Californian home base but to remain posted at Pearl Harbor.

By contrast, Germany chose a radically different approach to the problem of oil supplies in wartime. The Hitler government which came to power in 1933 had given a powerful boost to the production of synthetic gasoline by hydrogenation, which IG Farben had championed since the 1920s (see Volume 1, Chapters 6 and 7).
Another of Shell’s wartime aviation heroes, Douglas (later Sir Douglas) Bader, lost both legs in an air crash late in 1931. Invalided out of the RAF in 1933, he joined Asiatic Petroleum’s Aviation Department, and was able to rejoin the RAF in 1939. His wartime exploits earned him many awards and an international reputation: as a prisoner of war he was treated with great respect by his captors. Afterwards he returned to Shell, becoming manager of Group Aviation Operations in 1952 and first managing director of Shell Aviation in 1958. He retired in 1969.

As a result, synthetic gasoline already covered nearly a third of oil consumption in 1939, oil production from indigenous wells bringing self-sufficiency up to 49 per cent. Four years and a massive investment programme later, the percentage had risen to an impressive 75 per cent. The rest came from Romania and from oil stocks captured in conquered countries. Germany did not adopt iso-octane for raising the octane number of synthetic gasoline, presumably because the country lacked the necessary installations to produce it, but relied on adding benzol and tetraethyl lead (TEL), produced by IG Farben under licence from Jersey Standard, to counter engine knock. This restricted the octane number of gasoline produced to 87, because of a technical limit to the addition of lead, which in turn curtailed the performance of Luftwaffe combat aircraft. As early as 1938 high-octane gasoline and anti-knock additives were in such short supply that the government lowered the standard for gasoline used by private motor cars to 74 octane. Hermann Goering, who was both commander of the air force and in charge of the four-year plan to raise synthetic gasoline output, accepted the importance of 100-octane gasoline only in 1938, when it was already too late to start producing it in sufficient quantities.

Interestingly, Germany did possess the means to overcome the structural disadvantage suffered by the Luftwaffe in the form of the turbojet engine, but failed to capitalize on it. Conceived almost simultaneously by four different engineers independently of each other, jet engines reached the stage of static running tests in Britain and in Germany during 1937, within months of each other. Backed by the Heinkel aircraft works, jet development at first proceeded rapidly in Germany. In 1939 the world’s first jet-powered aircraft took to the air and in 1941 Heinkel began testing a prototype twin-engined jet fighter, which proved to be far superior to any aircraft the Third Reich possessed. Bottlenecks in bringing jet engines into series production then slowed down development for some three years. The first operational jet fighter, the Messerschmitt Me 262, began entering Luftwaffe service only from July 1944, too late to turn the tide. In Britain, the Group provided a crucial breakthrough when, in 1940, jet engine development stalled on interminable difficulties with fuel and combustion. A combustion chamber designed by the Fuel Oil Technical Department of Shell Mex & BP, the UK marketing joint venture with Anglo-Iranian, solved the problem, enabling the first British jet-powered aircraft to fly in 1941. The RAF started flying Gloster Meteor jet fighters also in July 1944.
Finally, coercion loomed large in Nazi oil policy. If private business resisted official policy, for instance the building of hydrogenation works, officials resorted to force. When, in 1938, the Group refused to raise its participation in the Pölitz hydrogenation works to accommodate a substantial expansion of capacity ordered by the Reichswirtschaftsministerium, ministry officials threatened to take Rhenania-Ossag, which held the shares, into administration if managers did not comply (see Volume 1, Chapter 7). Other companies had to be goaded into taking part in hydrogenation ventures by similar means. The government also imposed strict controls on the retail trade in oil products, setting standards, laying down numbers and locations of service stations, restricting the private use of fuel oil, and finally binding all oil companies to a semi-public body, all before the war had broken out. In January 1940, the Group lost control over its German business when the government appointed a Verwalter or caretaker manager to take charge of Rhenania-Ossag.

These very different starting positions determined to a large extent the outcome of what followed. The Allied countries had ample access to oil and could bring an overwhelming superiority of manpower and resources to bear on getting supplies of the kind and in the volumes required. To them, oil posed a logistic problem, as it had during the First World War. This could be formidable at times; as the American General George Patton famously put it to the Supreme Allied Commander General Eisenhower when he ran out of fuel in 1944, 'my men can eat their belts, but my tanks have gotta have gas.' Even so the problem was not an impossible one. By contrast, two of the three Axis powers, Italy and Japan, would face a critical situation if war cut their overseas supply lines. The oil supply position of the third, Germany, looked far better, but it was
Defending the business  As for the Group's own war preparations, Bataafsche had been involved with defence issues in the Dutch East Indies from the early 1920s, when the colonial government started worrying about threats to the outlying districts of the vast archipelago, such as Tarakan and Balik Papan. The discussions with the military authorities about drafting plans for destroying oil stocks and installations led Bataafsche to take a decidedly contradictory stand. The company wanted a strong colonial defence, but refused to face the consequences, i.e. prepare plans for the evacuation and demolition of its installations to deny the enemy the use of vital resources. The Hague permitted the Batavia general manager to give the authorities oral information, but nothing written, about general arrangements on the various installations, so the army could draft its own plans, but no more. Similarly, Bataafsche managers militated against the deleterious effects of deep spending cuts on the readiness of army, navy, and air force, but fought tooth and nail against higher taxes to pay for increased defence spending; they pressed for vigorous action, and complained when government departments received comprehensive powers to deal with economic and military emergencies. The arrangements at the Pernis installation also reflected Bataafsche's general attitude towards economic defence. Company employees were not to engage in any demolition activities but were to leave this to army troops admitted to the installation for the purpose of giving a special password. When the signal came, the Pernis staff would do no more than mix the available product stocks together so as to make them unsuitable for direct use.

The principled refusal to collaborate originated from four considerations. First, the issue of information and command. Staff would not necessarily have the military intelligence required to assess the situation correctly and proceed with the demolitions at the right time, that is to say, neither too early nor too late. This required setting up a chain of command including provision for a rupturing of the chain. Second, soldiers engaged in demolition works had the cover of the Geneva Convention, but company staff ran the risk of being shot as saboteurs. Third, cost, presumably reinforced by doubts about the validity of compensation claims for any damage inflicted if the company willingly collaborated in planning destruction; and finally, an aversion to endangering the continuity of the business under any circumstances.

As regards cost, in preparing the defence of the Dutch East Indies, the cradle of the business, Bataafsche took the same commercial attitude as in discussions with the government officials in Japan, Italy, France, or Germany about increasing stocks. This was summarized in a January 1940 instruction: 'the company cannot be expected to bear the financial burden of maintaining non-commercial stock and cannot be expected to make non-commercial investments without proper remuneration'. Or, as one telex from the same month put it, 'we are anxious to assist the government whenever possible without great inconvenience or expense to ourselves'. In other words, the company came first, the country second. The other main producer in the Dutch East Indies, Standard-Vacuum's Nederlandsche Koloniale Petroleum Maatschappij (NKPM), had a similar attitude to making defence arrangements. The reader may remember from Volume 1, Chapter 3, that the Group nursed this kind of pragmatism concerning wartime operations during 1914-18 as well. Inflicting lasting damage on fields and installations would be too
Together with other companies facing the same problem, such as Philips, Unilever NV, and the big international shipping lines, the Royal Dutch and Bataafsche boards sought ways to bring the companies themselves into safety. Philips and Unilever NV transferred the ownership of their foreign assets to overseas trusts set up for the purpose, but the shipping companies, Royal Dutch, and Bataafsche preferred to use special legislation enacted on 8 May 1940 to transfer the legal seat of companies to the overseas territories of the Kingdom of the Netherlands in case of an emergency. Two days later, on 10 May, Royal Dutch, Bataafsche, and a string of other Group companies officially moved from The Hague to Curaçao, where A.S. Oppenheim, the head of the legal department, had prepared a formal company office in February. On that fateful day he sat at his desk, together with a notary public, knowing that the Netherlands were at war and waiting for the telegram instructing him to effect the transfer.

Why did the Dutch Group directors opt for this particular solution and why did they choose Curaçao? With an annual processing capacity in 1940 of 8 million tons, 56 million barrels, in 1940, the refinery there was the Group’s biggest overall and the third biggest in the world, after Anglo-Iranian's Abadan plant and Jersey's installations on Aruba; but from the viewpoint of management the island remained an outpost. As Oppenheim himself acknowledged, his Curaçao office was a façade. There was no intention to let it do more than to convene shareholders’ meetings and perform other acts required under the law and under the articles of association. Such acts assumed a purely ritual character, because under the circumstances no shareholders, directors, or managers could think of travelling thousands of miles to attend meetings or sign financial statements. In July 1940, Group managers sent Van Eck to the United States so the company would have a senior manager outside of the combat zone should Britain also be invaded by Germany. Van Eck set up a representative office for the Group in New York and remained stationed there until the end of the war, as if to highlight the fact that Curaçao was no more than a paper presence. Batavia might have been a more logical choice. The shipping lines which had their main operations in Asia transferred their seats to Batavia and for some time Bataafsche had faced calls to show a greater commitment to the Dutch East Indies, for instance by raising the position of the general manager to board level.

Moreover, the solution chosen left the Group’s assets controlled from the Netherlands dangerously exposed to enemy action until the very last moment. By contrast, Philips and Unilever NV had the trusts for their overseas assets safely in place during the summer of 1939. Managers of the big Dutch multinationals held regular meetings to discuss joint political, legal, and financial problems and such an important subject as the legal preparations for war will have figured at those meetings. Both Philips and
Royal Dutch Petroleum Company

N. V. Koninklijke Nederlandsche Maatschappij

Tot Exploitatie van Petroleumbronnen in Nederlandsch-Indie

The Royal Dutch and all its Dutch Subsidiaries

including the

N. V. de Bataafsche Petroleum Maatschappij

transferred their domiciles from The Hague to Willemstad, Curacao, in May 1940 on the invasion of Holland by Germany. Shareholders will be glad to know that the Company is conducting its business free from all control by the enemy and that all its resources are on the side of the battle for freedom.

The transfer of domicile, enabling the Company to escape all enemy influence, was made in virtue of the law promulgated in Holland on April 26th, 1940, the relevant clauses of which read as follows:

ARTICLE 1

1. By making a corresponding amendment in the Memorandum of Association, the place of domicile of a limited company domiciled in the Netherlands, Netherlands-Indies, Surinam, or Curacao may be transferred to another part of the territory of the Kingdom of the Netherlands.

2. The management of the company is authorised to amend the Memorandum of Association accordingly: the consent or cooperation of the general meeting of shareholders or any other body of the company is not required for this purpose. If one or more managers—respectively two or more managers jointly—are entrusted with the management of the company, each of these managers—respectively the managers jointly—are authorised to amend the Memorandum of Association.

The Articles of Association of the Royal Dutch and the B.P.M. have been altered according to the provisions of the law.
Bataafsche formed part of a commission which prepared draft legislation for the transfer of company seats. The Dutch Group managers will therefore have been aware of the trust construction chosen by Philips and Unilever NV. Why then did they not do the same and invest the Royal Dutch and Bataafsche assets in a British trust managed from London? After all, for both Royal Dutch and Bataafsche, St Helen's Court and Teddington became the centre of all operations. Moreover, the Group had made an arrangement with the British Treasury, probably in September 1939, to have Bataafsche treated as a resident in the UK and thus subject to that country’s foreign exchange regulations. This was a logical consequence of Anglo-Saxon’s position as Group treasurer; it meant that all Bataafsche’s foreign currency earnings flowed to the Treasury, which in return undertook to supply the Group with any currency needed, for instance dollars to buy equipment in the US. The arrangement also covered Curaçao’s unusual position, earning mostly sterling from oil exports, but needing dollars for its purchases. Keeping the Group within the sterling currency area was a vital interest for the UK, which had great difficulty in finding dollars to pay for essential imports. For the Group the arrangement was beneficial overall, though disadvantageous for some parts of the business, notably those in the Dutch East Indies.

The answer probably lies in issues of management and control. The trusts effectively made the Philips and Unilever NV assets controlled by them subject to British and, in one case, American law, with the trustees exercising the management over them according to the best interests of the shareholders in those assets. When moving the company seat, the assets remained subject to Dutch law, however, and managers did not have to contend with outsiders who might have a different opinion about the interests of shareholders. In addition the move to Curaçao was probably intended as a statement, to emphasize the Dutch character of Royal Dutch and Bataafsche. Unilever NV made no bones about making Unilever Ltd. in London the focus of all its operations; Royal Dutch’s choice for Curaçao suggests that managers felt uncomfortable at the prospect of relying too much on London and sought leverage by establishing an Archimedean point on Dutch territory. This must have been what annoyed Godber in writing to Van Eck: not the transfer itself, but the choice of destination. In the overcharged atmosphere of the war, such questions of nationality would assume ever greater proportions, only to suddenly melt away in 1945, as we shall see.

The transfer was not an unqualified success, either. The Reichskommissar A. Seyss-Inquart, the highest civil authority in the Netherlands during the German occupation, picked on a technicality to declare it null and void. Consequently the Verwalter appointed to manage Royal Dutch and Bataafsche had full powers to act on behalf of the concern in occupied Europe and in the countries allied to Germany, such as Romania. The Verwalter lost no time in appointing a new general manager, more amenable to the German demands, at Astra Romana, the Group’s operating company there and that country’s biggest oil producer. The evacuation of the management and core staff from The Hague also had the unfortunate side effect of leaving the office and the rest of the employees there without proper guidance. It had apparently been agreed that the Royal Dutch Director-General and de facto Group CEO Frits de Kok would accompany the last staff and papers to leave the country, leaving fellow director J. M. de Booy in overall charge of central offices in The Hague, but on the afternoon of 14 May De Kok, already terminally ill, persuaded De Booy to go in his place. That evening De Booy caught a fishing boat leaving Scheveningen for Britain, one of the very last escape opportunities.
In September 1940 De Kok slipped discreetly out of the offices, telling only one person that he needed to rest. He went directly into hospital and did not return. De Kok died on 28 October at the age of only fifty-eight, and the news of his death created a spontaneous show of public sympathy in The Hague, best understood as an expression of mourning both for the man and for a national past, brutally ended by the German occupation, in which his long-distance flights had captured the imagination. A large, silent crowd gathered in front of the Royal Dutch office in the Carel van Bylandtlaan to pay its last respects, and an even larger number of people attended the funeral a few days later. Following De Kok's death N. van Wijk, the Royal Dutch company secretary, became the senior manager of the rump in The Hague and the Verwalter Hauptmann Eichardt von Klass appointed him a director. The Dutch companies in exile now faced the very difficult problem of appointing a successor, with all the normal rules suspended. As in 1936, Kessler was the obvious candidate, and again he did not make it. To avoid antagonizing the British managing directors further, no successor was appointed. However, as we shall see, the Group managing directors soon clashed over other appointments.

Another measure taken following the German invasion of the Netherlands was the dismissal of German staff and other employees considered to be of doubtful political allegiance, such as Dutch Nazi party members, Austrians, and Romanians. Whether Anglo-Saxon and Asiatic had dismissed Germans and other enemy aliens from their overseas operating companies in September 1939 we do not know; at any rate Bataafsche had not done so. In April 1939, Bataafsche suspended some people with Nazi sympathies working at central offices in The Hague, presumably to quell unrest amongst the rest of the staff. No further steps appear to have been taken until mid-May, when reports began reaching London about employees being arrested in the Dutch East Indies, Surinam,
The invasion of the Netherlands forced the Group to consider how to treat its employees of enemy nationality. Below, its Argentine company Diadema requests advice; below right, the reply from Kessler and Van Eck; right, confirmation from De Booy.
treated the indigenous people forced to work for them far worse than they treated the Europeans, we must assume that upwards of 3,200 Asian Group employees died during the war as well.

In the end, Japan's ability to sustain the war foundered on the Allied efforts to cut its oil supplies by targeting the tankers transporting them from the Dutch East Indies. Oil imports to Japan fell from 1943 and by late 1944 the supply position had become critical, imposing heavy restrictions on all military operations. Though it was hard fighting followed by the two atom bombs which secured the Allied victory over Japan in August 1945, it was the stranglehold on oil which prepared the ground.

The Allies applied the same strategy in Europe, and with very similar results, although achieved over a much longer period. The first target in denying oil to Germany was of course Romania. From the outbreak of war in 1939, Britain and France attempted to lock up supplies by purchasing oil on long-term contracts, Shell Union taking up Astra Romana's output. The two Allies also tried to deny Germany oil by tying down transport facilities. As Romania started moving from neutrality to an alliance with Germany during 1940, this became more and more difficult. In September a pro-German general forced the King's abdication and installed himself as dictator, after which the Romanian industry was increasingly drawn into the Axis war effort.

During the autumn of 1940 Astra Romana was brought into the German fold when Bataafsche's Verwalter appointed a new pro-German board and a Dutch Nazi general manager, J. H. W. Rost van Tonningen. Rost had had a good career with Bataafsche as an engineer, rising to the position of visiting technical inspector of the Group installations in Italy, Austria, Hungary, Yugoslavia, and Romania. During the 1930s he developed a keen interest in fascism, joining the Dutch Nazi party, NSB, probably in 1935. A month before the German invasion of the Netherlands, Bataafsche suspended Rost from work because of his dubious political allegiance. Reinstated in July 1940, presumably through the influence of his brother, a prominent leader of the Dutch Nazi movement, Rost fitted the German intentions perfectly. With the Nazis' domination of Europe seemingly secured, he regarded it as his task to steer Astra into a strong position within the new economic order, independent of, yet closely allied with, German interests. Consequently, he took the initiative to build an alkylation plant for making 100-octane gasoline at Astra's Ploesti works and he accepted a deal which gave Kontinentale Öl AG, which the Nazi government wanted to nurse into a big international oil company, a half share in Astra's concessions. Construction on the alkylation plant started in 1941, but the war circumstances prevented its completion.

During the war, Romania's crude production declined, but deliveries to Germany climbed from 1.4 million tons in 1940 to 3 million tons three years later, about one-third of oil consumption. Once Romania had joined the Axis in November 1940, the Allies started planning to knock out the oil industry by bombing. In June 1942, Allied aircraft mounted a first attack on Ploesti, the main manufacturing centre for all companies producing in Romania, and despite sometimes appalling losses in men and machines the raids continued at a rising pace until August 1944, when Romania switched to the Allied side and concluded an armistice with the Soviet army. The Germans had driven huge numbers of forced labourers to rebuild the oil refineries around Ploesti. The scale of the devastation is not exactly known, but Astra's plant emerged from the war in a surprisingly good condition overall. Some of the installations had been knocked out, others operated at a reduced capacity; major units such as three of the four Dubbs crackers, the Trumble plant, the vacuum distiller, and the gasoline reformer were still in full working order. Within months the refinery was back at 77 per cent of its pre-war processing capacity. The Allied bombing offensive against oil installations in Germany itself, which started in
May 1944, was rather more successful. Within four months, the output of synthetic gasoline had dropped from 92,000 to only 5,000 barrels per day. The production of aircraft fuel had dwindled to almost nothing, effectively grounding much of the Luftwaffe and giving total air superiority to the Allies. The Pöltz hydrogenation works, in which the Group’s German operating company had a one-third stake, shared in the destruction. The company’s other main installations appear to have escaped the worst. The Hamburg installations are said to have been heavily damaged; the plants in Monheim and in Reisholz, and the Regensburg bulk installation, received little damage, and the Volto lube oil works in Freital near Dresden none at all. Oral Group tradition has it that managers supplied the Allied air forces with the plans of installations in Germany, thereby helping to destroy them more effectively. We have found no material in Group records to corroborate that story, but it is probably true because there existed a committee of four members, including an oil industry expert from Shell and one from Jersey Standard, which assisted the British Air Ministry in interpreting bomb damage to oil installations. However, the varying level of destruction at the German plants suggests that any information passed through that committee about them had little practical effect on the extent of the damage inflicted.\footnote{117}

Manufacturing for victory During the course of the war the Group not only lost a third of its crude output, but also nearly a third of its primary processing capacity.\footnote{118} As a consequence, Jersey Standard built up a lead in this respect as well, its refinery capacity increasing by over 50 per cent between 1940 and 1945, nearly all of it in the United States. At Shell Union, the only Group company for which we have comparable figures, refinery capacity rose by a comparatively meagre 27 per cent.\footnote{119} However, the essence of Group wartime manufacturing lay not in the overall growth of operations. Presumably because of its relative crude shortage, Shell gave precedence not to simply raising volume, but to upgrading plants, and to developing and making a remarkable variety of sophisticated hydrocarbon components and specialist hydrocarbon derived products. This policy was at the same time the direct result of, and a further stimulus to, the Group’s deepening commitment to research and chemicals since the 1920s (see Volume 1, Chapter 6). One simple figure, again from Shell Union, highlights the preference for product quality and product range over volume: with only 6 per cent of America’s refinery capacity, the company produced more than 13 per cent of the country’s aviation gasoline.\footnote{120}

Indeed, the search to maximize the production of aircraft fuel boosted many if not most of the manufacturing innovations adopted or developed by the Group during the war. A very
Under the shadow of the Nazis The German occupation of most of the European continent effectively took the operating companies there outside the Group’s control. We have already noted the Nazi government’s appointment of a Verwalter for Rhenania-Ossag in January 1940; the Bataafsche Verwalter subsequently assumed formal control over the companies in countries under German occupation or in the German sphere of influence, such as Hungary.

Of the Group’s companies under Nazi control only Astra, Rhenania-Ossag, and Nafta Italiana continued operating at their former levels. As we have already seen, Astra was drawn into the German war effort. As one of the two biggest German oil companies and the main lube oil manufacturer, Rhenania-Ossag was an industry leader in the country. Following Hitler’s annexation of Austria and Czechoslovakia, Group managing directors sanctioned Rhenania-Ossag taking over the Shell companies in those countries. With the rupture of overseas supplies, Rhenania-Ossag turnover plummetted, but the company formed part of the official oil cartel and thus had a share in the processing and distribution of any oil coming in, which assured a steady, if meagre, flow of revenues. In December 1940 the Verwalter activated the hidden financial reserves built up during the 1930s to raise the company’s capital from 75 million to 120 million Reichsmarks. A year later Rhenania-Ossag floated a bond loan of RM 60 million to pay off an old loan from Bataafsche and finance some new installations. Meanwhile the relationship between parent company and subsidiary had to some extent been reversed by the appointment of Rhenania-Ossag’s research director as Verwalter over Bataafsche’s Amsterdam laboratory, to ensure that it would contribute to the German war effort.

In allen Betriebsstellen unserer Organisation, in den Werken und Lagern, in den Laboratorien und wissenschaftlichen Versuchsabteilungen wird mit größter Anspannung für Aufgaben geschaffen, die heute vor allem wichtig sind. Was dabei an Erfahrungen gewonnen, an Verbesserungen erzielt wird, dient heute schon der Kriegswirtschaft und wird morgen unserer gesamten Kundschaft zugänglich sein.

Rhenania-Ossag

The Group similarly lost control over its subsidiary Nafta Italiana in July 1940. After Italy’s entry into the war, the Mussolini government sequestered the company, putting the Group general manager, W. de Graan, in prison and appointing the president of AGIP as caretaker manager. Since Bataafsche held 80 per cent of the Nafta shares and Anglo-Saxon only 20, von Klass vigorously protested and attempted to get the sequestration overturned. However, in 1942 the Italian government fulfilled a long-standing ambition to create a national oil company and merged Nafta into AGIP.
Above, as an epitome of the Nazi occupation of the Netherlands, the Swastika flag flies on the classic Dutch façade of Royal Dutch’s head office at 30 Carel van Bylandtlaan in The Hague. In the offices’ ground plan, left, preparations for their defence include emergency exits and shelters.
All other European companies had to reduce their operations sharply following the suspension of overseas imports. Norske Shell dismissed 30 per cent of its staff, and Danske Shell a full 50 per cent. In July 1940, Bataafsche put 2,376 of its 5,373 employees in the Netherlands on half pay. The sale of remaining stocks from Pernis and elsewhere plus various other sources of income generated sufficient revenue to pay the skeleton staff and the company ended the war with a small surplus. By December 1943, Pernis still had some stocks left, a little gasoline, some white spirit, substantial quantities of lube oils and fuel oil, and a surprisingly large volume of butane gas, more than ten times the volume present in May 1940. Some employees found work in the government-organized distribution of oil products. Bataafsche kept other staff in work by forming a joint venture with the German company Gewerkschaft Elwerath for E&P operations in the eastern regions of the Netherlands and along the border with Germany. The Amsterdam laboratory and the Delft engine-testing station, which together employed over 1,000 staff, received instructions to start generating their own income by attracting outside work. Amsterdam succeeded so well in getting commissions that in 1943 a memo to von Klass complained that the laboratory did not contribute any serious work to the German war effort. One of the commercial activities undertaken was the modification of motor vehicles to run on butane/propane and gas made from coal and charcoal. Following the growing interest in pesticides, Amsterdam laboratory started investigating DDT, producing small quantities and preparing plans for a pilot plant. Another field of investigation was polyvinylchloride or PVC. Researchers discovered a way for making this plastic from the coke oven gases at MEKOG’s Ijmuiden plant, which was later to enable Bataafsche to bypass existing patents based on using offgases from cracking oil. Following the same line of thinking, the French Group company Jupiter embarked on large-scale charcoal-burning activities, buying woodlands and setting up a processing and distribution network.
As Bataafsche Verwalter, von Klass had the difficult task of running a fairly large and international company which had lost its purpose. He strove to maintain the integrity of Royal Dutch as a holding company with an eye to keeping the business strong so it could serve Germany after the war. To that end he travelled around to exercise supervision over Group companies in occupied Europe, negotiated successfully to acquire the companies in Hungary, Yugoslavia, and Greece, but failed to get hold of companies in neutral countries because he could not show title to the shares, which were in London. When Germany invaded the Soviet Union, von Klass immediately contacted Berlin to resuscitate the Group’s claim on its nationalized properties in that country. To make himself agreeable, he had Bataafsche sell idle installations and equipment to German companies and tried to mobilize employees to work in Germany, but apparently without much success.

The Verwalter Eckhardt von Klass, caricatured (far left) in 1945 by Johannes Maat (presumably a Group employee), and (above left) Von Klass in his office at 30 Carel van Bylandtlaan. Above right is one of Von Klass’s travel documents, and right, a receipt for aviation fuel, both prominently stamped with the Nazi eagle.
De Kunstmayonaise werd bereid volgens het recept ons door den heer Mulder verstrekt. 3 gram gelatine werd opgelost in 30 cm³ water en deze oplossing met 10 cm³ kruidenazijn (4%) aan 20 cm³ plasma onder roeren toegevoegd. Het mengsel werd vervolgens ca. 1/2 uur op een waterbad onder intensief roeren verwarmd.

Dit product werd homogeniseerd door het tusschen de walsen van een verfmolen te laten vloeien en vervolgens geanalyseerd. Het geanalyseerde product bevat dus niet de voor de praktijk gekozen toevoeging van smaakstoffen, n.l. 4 gram mosterd, 1/2 gram keukenzout en 0,2 gram peper.

<table>
<thead>
<tr>
<th>TOEVOEGING</th>
<th>1 1/2 dag</th>
<th>2 1/2 dag</th>
<th>7 dagen</th>
<th>14 dagen</th>
</tr>
</thead>
<tbody>
<tr>
<td>0,1% salicylzuur in alcohol</td>
<td>goed, reuk</td>
<td>reuk</td>
<td>schimmel</td>
<td>schimmel</td>
</tr>
<tr>
<td></td>
<td>naar blik-</td>
<td>schimmel</td>
<td>gerooid</td>
<td>groot nog steeds</td>
</tr>
<tr>
<td>groente</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>0,1% baarzuur (in alcohol)</td>
<td>goed, reuk</td>
<td>reuk</td>
<td>onveranderd</td>
<td>onveranderd</td>
</tr>
<tr>
<td></td>
<td>naar blik-</td>
<td>schimmel</td>
<td>groot nog steeds</td>
<td></td>
</tr>
<tr>
<td>groente</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>dubbele hoeveelheid azijnzuur</td>
<td>goed, enige</td>
<td>onveranderd</td>
<td>reuk</td>
<td>schimmel</td>
</tr>
<tr>
<td></td>
<td>reuk naar</td>
<td>schimmel</td>
<td>groot nog steeds</td>
<td></td>
</tr>
<tr>
<td>blikgroente</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>0,2% Kaliumnitraat, opgelost in water</td>
<td>goed, reuk</td>
<td>reuk erg</td>
<td>schimmel</td>
<td>groot nog steeds</td>
</tr>
<tr>
<td></td>
<td>naar blik-</td>
<td>schimmel</td>
<td>groot nog steeds</td>
<td></td>
</tr>
<tr>
<td>groente</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5-veugige concentratie aan azijnzuur</td>
<td>goed</td>
<td>goed</td>
<td>goed</td>
<td>goed</td>
</tr>
</tbody>
</table>
Necessity is the mother of invention, and in Birmingham, UK, taxis were converted to run on gas rather than gasoline. But with steel urgently needed for the armed forces, there was no chance of using pressurized tanks, and the fuel had to be carried in gaseous form, not liquid. One bagful lasted 15-20 miles. In Amsterdam (main picture), not even that opportunity existed, and another solution was found.

slowly, in February 1942 sending a circular to its Dutch offices instructing them to have the staff complete an Ariëverklaring, a form giving particulars about their descent. This survey resulted in forty people being classified as Jewish under the German laws. In March, von Klass ordered them to be put on half pay and then dismissed with effect from the end of April. At least twenty of them did not survive the war.¹⁵⁵

In September 1942 von Klass volunteered to send men and installations from Bataafsche to help with the planned rehabilitation of the Soviet oil industry, now that the German army had reached the Caucasus and looked likely to conquer the great production regions there. An inspection team toured Group installations to select suitable ones and two Bataafsche engineers, both NSB members, were appointed to head a department entrusted with preparing the mission to the Caucasus. The initial plans envisaged a team of 200-300 men able to operate as an independent unit, which would first dismantle the Petit-Couronne refinery and then rebuild it in the Soviet Union. A call for volunteers resulted in 228 applications, of which 106 came from Bataafsche staff and the rest from outsiders with friends or family members in the company. However, Kontinentale Öl had already contracted a company to dismantle Petit-Couronne and did not want help. The two prospective leaders showed themselves incapable of forming a proper team and, because no senior staff had applied, the mission remained seriously underqualified for any work. In the end, nothing happened; during November 1942 the German push towards Grozny and Baku was beaten back, ending all prospects of
The battle of the boards  If Godber had hoped that his May 1940 letter to Van Eck might clear the air between the British and Dutch managing directors, he was disappointed. During the first years of the war, relations between them went from bad to worse until, at an unknown point in time, the two sides finally found each other again in a compromise solution. As Godber's letter showed, the friction originated in a struggle for power which had started after Deterding's retirement as de facto Group CEO in 1936 (see Volume 1, Chapter 7). Deterding had truly acted as a bridge between the parent companies, his very personal leadership style and unquestioned authority preventing differences of opinion between British and Dutch managing directors becoming a wedge.

Once he had gone, a wide crack opened. The central issue was always the question of ultimate control over the Group, a confrontation between insensitive Dutch assertions of their majority and a British failure to accept that the business was not simply a British business. If Dutch directors were too quick to see threats to their position of power, the British directors were prone to present their own interest as the self-evident Group interest, and anything that went against that as harmful to the integrity of the business. Conversely, the Dutch appear to have been more imaginative in devising managerial changes to eliminate bottlenecks in the organization, with the British keen advocates of the status quo, as often as not interpreting proposals for change as Dutch attempts to take control. And of course, each side considered its own contribution to the business as more important than the other, the Dutch likely to emphasize technology and the Dutch East Indies, the British the brand and the power of the British Empire. De Kok had done much to bridge the gap with his tactful personal diplomacy, and the emergence of the term Group managing directors for the five top managers showed him trying to build a team, but the bonding between them remained tentative.

The Group's planning for war immediately widened the crack to a chasm. British managers used the threat to the Group's assets managed from The Hague to press for greater British control over them by the appointment of Godber and Legh-Jones as managing directors of Bataafsche, so they could represent the company in
Britain should the Netherlands suddenly be overrun by Germany. Agnew even proposed altering the ownership ratio from 60:40 to 50:50. He did this presumably with the argument that it would reinforce the Group's position with the British government. From time to time in the past, officials had declined to give political support because of the majority foreign ownership. Though the Foreign Office had, as we have seen, pursued the Group's claims in Mexico with vigour, the Treasury probably raised the point again in discussions about currency arrangements and Bataafsche's prospective status as a company resident in the UK. The Dutch directors interpreted the British proposals as driven by a desire to take control and accordingly resisted them. Coupled with the Dutch directors' brinkmanship in assuring the safety of the Group's companies and assets in The Hague, this attitude considerably vexed their British colleagues.\(^{161}\)

The delicate managerial balance was then upset by the German occupation of the Netherlands and the transfer of Bataafsche and Royal Dutch to Curaçao. The Netherlands was no longer a country, but just one of the many governments in exile, with much dignity but very little power, and probably quite unable to defend the Dutch East Indies against the imminent Japanese attack. These circumstances fanned the chauvinism of the Dutch Group directors, who suddenly found themselves holding a priceless asset which might one day help to ensure the resurgence of the Netherlands. As Kessler and De Booy put it, 'After the war the importance of the Royal Dutch assets relative to the total assets is likely to be still larger than it has ever been in the past. We (we feel) are the Trustees for the Nation in that matter and whether we like it or not we must defend the property.'\(^{162}\) But they could no longer support the force of their arguments with the power of numbers. In addition to De Kok, all the Group's Dutch non-executive directors remained in the Netherlands, except for one Royal Dutch commissaris, Daan Crena de Jongh, who happened to be visiting the Dutch East Indies in May 1940. Following the seat transfer, the Royal Dutch and Bataafsche directors in enemy territory had been suspended from their office, leaving the three managing directors out on a limb facing the full complement of directors on the British side. Shell Transport's formidable team was led by the chairman Walter
REICH OIL MONOPOLY
Sought by Deterding

Hitler's Terms for Control of Distribution Unsatisfactory to Royal Dutch and Shell.

Wireless to THE NEW YORK TIMES.

LONDON, Oct. 25.—It is reported confidentially from Berlin that the object of Sir Henry Deterding's recent visit to Chancellor Hitler at Berchtesgaden, where he stayed for four days, was to discuss the conditions for granting a monopoly to the Royal Dutch and Shell Companies of petrol distribution in Germany for a long period of years. Chancellor Hitler's terms were unsatisfactory and the negotiations have broken down temporarily.

Three conditions advanced by the Germans were:
First—The companies were to supply oil on credit for the first year.
Second—The companies were to build a network of distributing stations along strategic motor roads, these buildings to be protected against air attacks.
Third—The companies were to invest their money, frozen in Germany, locally.