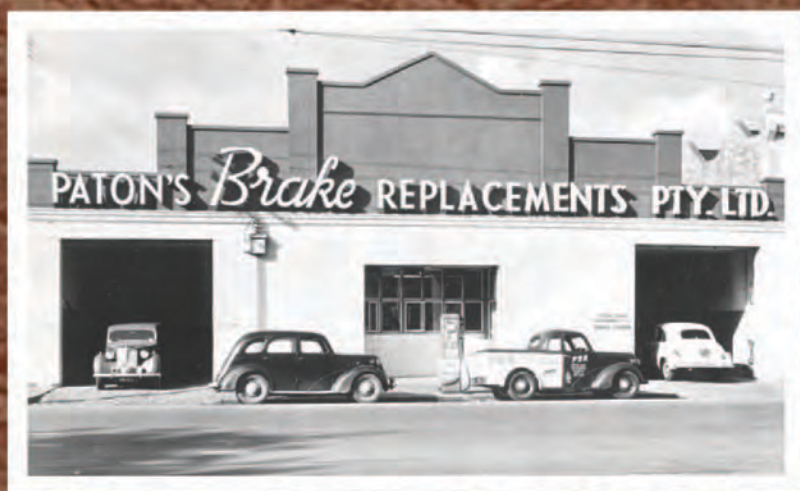


THE GARAGE THAT GREW

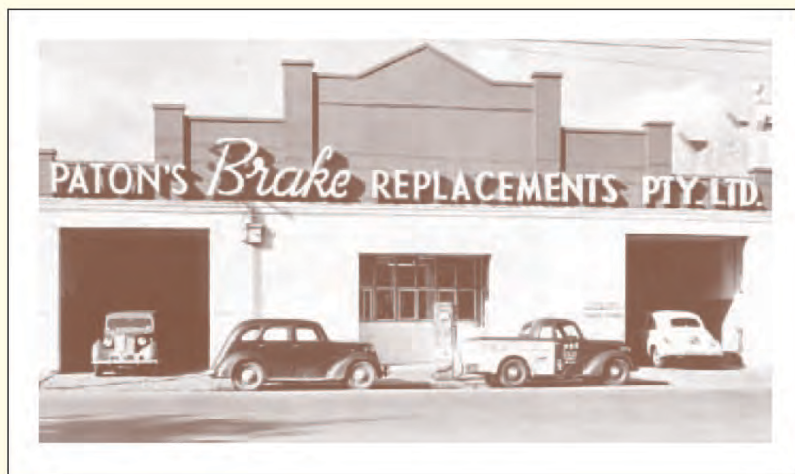


A HISTORY OF PBR
1927 - 2017





— THE —
GARAGE
— THAT —
GREW



A HISTORY OF PBR
1927 - 2017

Tom Valenta



ACKNOWLEDGEMENTS

A number of former and current PBR people made magnificent contributions to this history.

They are:

Peter Culley

Mike Delacorn

Derek Hodgson

Mark Jones

Vin Keane

Albert Parsons

Graham Peacock

Les Pye

Patrick Sawyer

Alan Stevens

David Tennent

Alan Warby

Their knowledge, collections of memorabilia and love of the company provided the priceless insights and anecdotes without which history is merely a collection of dates and facts.

Tom Valenta

Melbourne

CONTENTS

AN AUSTRALIAN SUCCESS STORY.....	5
GOLDEN DAYS	7
THE DEPRESSION	9
THE WAR YEARS.....	11
ENTER REPCO.....	11
THE MOVE TO EAST BENTLEIGH	14
RETURN OF THE BOOM TIMES.....	16
INNOVATION THROUGH MOTOR RACING.....	20
THE FABULOUS SIXTIES.....	22
OIL SHOCKS AND INFLATION.....	26
AN ERA ENDS, ANOTHER BEGINS	29
LOOKING BEYOND AUSTRALIAN SHORES	30
GOING PUBLIC - AGAIN.....	33
NEW PRODUCTS, NEW FRONTIERS	34
SETTING UP IN THE STATES.....	37
THE ASIAN EXPERIENCE.....	41
NEW DIRECTIONS FOR THE NEW MILLENIUM.....	43
SEVENTY-FIVE YEARS ON.....	47

THIRD SCHEDULE

Form F.

PARTNERSHIP ACT 1915, Part 2, Section 61.

**Certificate of Registrar-General on Original Registration
of a Firm.**

I hereby Certify that the firm of
Paton's Brake Service Station
carrying on business at *140 Cucumbers Street*
North Melbourne
was, on the *1st* day of *December* 1927,
duly registered (No. *89472* (L) pursuant to Part 2 of the Partnership
Act 1915, and that according to the statement filed with me the Members of
such Firm *is*:-

John Griffiths Paton

Given under my hand this *1st* day of *December*
One thousand nine hundred and *twenty seven*

Alfred Allen

Deputy Registrar-General

The original certificate of incorporation shows that Paton Brake Service Station was registered on 1st December 1927 and established as a partnership.

AN AUSTRALIAN SUCCESS STORY

On 1 December 2002, the company now known as PBR International, or simply PBR, celebrated its 75th anniversary. For 75 years, PBR has grown and prospered during one of the most turbulent periods in history. Over those years there has been a world-wide depression, the Second World War, numerous booms and recessions and explosive growth in technologies that fundamentally changed the daily lives of industries and communities. Many large, well-known companies came and went during those 75 years. Remarkably, PBR has developed from the humblest of beginnings to its current status as an acknowledged world leader in brake technologies.

Why has PBR succeeded when so many other businesses have failed and disappeared over this period? This history reveals that PBR's longevity centres on an enduring set of values that are deeply ingrained in the company. These values are today known by names such as entrepreneurship, innovation, core competencies, human capital, risk-and-reward and customer focus. Many companies believe they espouse these values, but there is a huge gulf between "those who say" and "those who do".

It is doubtful whether the two young brothers, George and Jack Paton, had ever heard of the word "entrepreneurship" when they threw open the doors of their small workshop in Carlton, an inner Melbourne suburb, back in 1927. But their optimism and spirit of adventure certainly laid the cornerstone for what was to come. They also understood, very clearly, the needs of a new industry - the automotive industry - and how to service those needs.

Because the Paton brothers were working in a young, growing industry, they had to be innovative to remain in business. When parts could not be obtained, they designed and manufactured their own. When new types of vehicles, such as semi-trailers, first appeared on the roads, the Patons were quick to design and manufacture brakes that could cope with these huge, heavy vehicles. The PBR products were so good that, during the war, they were fitted to heavy trailer-type vehicles for both the Australian Army and the Australian-based US military.

The brothers never strayed from what we now call "core competencies". They were specialists who understood brakes and, as the automotive industry evolved, they continually worked on designing and making better products, and looking for ways of improving their manufacturing processes and service to customers. But they never fell into the trap of trying to provide products and services that they did not understand, no matter how tempting this must have been in a rapidly growing industry. They also understood, as did the generations that followed, that brakes were a safety critical product so there could never be any compromise on the quality of their work. Their commitment to the people who worked for them was outstanding. Throughout the Great Depression, they refused to lay off a single employee – a formidable feat in the 1930s when unemployment reached a staggering 33%.

The values of the Paton brothers remained embedded in the company down the decades. During the 1950s and 60s the torch was carried by Jack Pearce who spent all but 16 years of his entire life with the company. Under his leadership, PBR flourished as a business that saw no limits to what it was capable of achieving and an exciting place to work. In times of adversity such as the oil shocks and inflationary times of the 1970s, PBR saw the problems as opportunities and created new, lightweight products that reduced vehicle fuel consumption and set new standards of performance. When Australian trade barriers began to fall and manufacturing industry reform was required in the 1980s, PBR was already planning its future as a truly international business, capable of matching it with the best in the world.

In the final decade of the 20th Century and into the new Millennium, the entrepreneurial PBR spirit was to be seen in its expansion into Asia and North America. Today there is a ceaseless desire to improve the way in which things are done and innovation is a touchstone. New products and processes keep PBR at the leading edge of world brake technologies even at a time when its competitors are multi-billion dollar international corporations with massive research and development and marketing budgets.

By any measure, PBR is a true Australian success story.

GOLDEN DAYS

In December 1927, the city of Melbourne was a bright, happy place. As the citizens prepared for Christmas, the mood was one of optimism and high expectations. New electric trams were running in the central city and there were plans to build an underground railway. The motor car was becoming more affordable and popular as mass production reduced prices. Registrations in Victoria during the 1920s grew eightfold. Motorised transport was transforming the city and a new industry was growing as a result of this demand. It was, after all the roaring twenties and people thought the good times would never end.



George and Jack Paton, the founding brothers. The workshop they established in the inner Melbourne suburb of Carlton was destined to become a world leader in brake technologies.

The Australian experience was similar to what was happening in other parts of the world. Nothing exemplified the golden era more than the Model T Ford – by 1927 there were 15 million on the roads and the Model A was about to be launched. Mass production had brought the automobile within reach of



Jack Pearce, the legendary leader of PBR who joined as a 16-year-old in 1930 when the business employed six people. He spent the rest of his working life with PBR and became a director of Repco.

ordinary wage earners. As vehicles of many makes and models grew in popularity, they created massive demands for the steel, rubber and timber from which they were built as well as the fuels that propelled them. The boom times on the world's stock markets seemed to have no limits as a new industrial age was in full swing.

In Australia, car sales were growing at a very brisk pace but, despite local body building and assembly plants, there was little or no support for service, spare parts and repairs. On 1 December, two enterprising young brothers, George and Jack Paton, saw an opportunity and formed a partnership which they called Paton's Brake Service Station. With one employee, they opened a small brake repair shop in Queensberry Street, Carlton, an inner Melbourne suburb. George had already been working in the automotive parts industry while Jack had been a commercial traveller in Victoria and Tasmania. The Paton family hailed from the small seaside town of Whitehaven, Cumbria in the north-west of England. George and Jack, their brother Edward and sister Jeanie had come to Australia in 1913 with their parents to start new lives. All were teenagers when they arrived in Melbourne. George was 31 and Jack was 27 when they started their new business.

Paton's Brake Service Station opened just when the two most popular makes in Australia - Chevrolet and Ford commenced building vehicles with four-wheel, rather than two-wheel brakes. Business grew quickly but the brothers soon encountered a shortage of spare parts. With the foresight that was to be one of the cornerstones of their later success, the Paton brothers commissioned a local manufacturer, Goldings Pty Ltd, to make rubber cups for hydraulic brakes. Their sister, Jeanie, had married Alfred Stanely Golding, the founder of Goldings, and a long and successful business relationship followed. By 1930, another business, Paton's Brake Replacement was formed specifically to source locally manufactured parts such as brake cables and stoplight switches. It also secured an agency for brake linings and for hydraulic brake components from the Bendix Corporation in the United States. Bendix was to be an important part of the PBR history over the next half century. The brothers also acquired Triangle Engineering Co. securing their entry into the engineering business, another PBR cornerstone. The workshop and the parts business stood side by side in Queensberry Street and, as the business expanded, they took up more of the industrial landscape on Queensberry Street. The Patons and their businesses remained there until after the Second World War.

THE DEPRESSION

The depression that hit most of the world at the end of the 1920s soon destroyed the boundless optimism of the previous decade. Australia was hard hit with one out of every three workers left unemployed. With high tariffs and currency devaluation to protect local manufacturers, Paton's was able to survive, and even grow. The repair shop of 1927 had rapidly converted into something much bigger and far greater things lay ahead.

In 1930, Paton's employed a total of six people and in that year, a 16-year-old country lad, Jack Pearce joined the firm. He was to stay for the rest of his working life and, in 1948, was appointed General Manager.



For many years, PBR sold its own brand of brake fluid which had a higher boiling point than fluid imported from overseas. Here brake fluid is being quality tested in the PBR laboratory.

From being merely a business that sourced parts from manufacturers, Paton's Brake Replacement commenced manufacturing in its own right. The Goldings business, owned by the Patons' brother-in-law, merged with Paton's in 1935, bringing its rubber manufacturing expertise into the enlarged firm. Paton's supplied all General Motors replacement brake drums for Chevrolet and Pontiac. Indeed, most importers and agents now relied on Paton's for supply of brake components. In the mid-1930s, a rivet making machine was installed and the company's long association with aluminium fabrication commenced when it started manufacturing aluminium and then brass rivets. The product range grew and included flexible fuel and oil lines, brake hoses, brake cylinders and pistons and a locally sourced high boiling-point brake fluid.

By the end of the decade, PBR, as it became known, had survived the worst economic period in Australia's history. It had done more than survive, it had continued to grow, expanding its premises in Queensberry Street to house its new business activities. A strong spirit of entrepreneurship, innovation and a "can do" culture pervaded the young organisation. The Paton brothers were justifiably proud of the fact that not one worker had been laid off as a consequence of the depression.

THE WAR YEARS

By the end of the 1930s, the world was plunged into something far more ominous than the depression – war had broken out in Europe and was soon to engulf the world. Australia was isolated and cut off from its normal supply routes. Self-sufficiency became essential if the nation was to survive. For PBR, this meant a massive shift in its priorities and the government of the day granted it a "guns and ammunition" priority for access to raw materials and labour. Paton's had developed expertise in manufacturing brakes for heavy duty vehicles such as semi-trailers, timber jinkers and buses. It's vacuum brake systems were therefore adopted for all Australian Army trailer type vehicles and for the vehicles of the large US Army and Marine contingents based in Australia. These vehicles were used to transport tanks, other armoured vehicles, artillery and ammunition. PBR also produced high-pressure hoses for the Australian Airforce's Wirraway fighters and controls for artillery guns.

The factory worked 24 hours a day with a total of 300 people on staff. By the end of the war, not only had PBR provided valuable military materials, it had also developed new skills that would help it with its next phase – the post-war era of rebuilding and reconstruction.

ENTER REPCO

Soon after the end of the war, the Paton brothers decided that it was time to retire. They had worked hard for 20 years and, even though they were still relatively young men, an opportunity to sell the business for £300,000 a handsome sum in those days, proved too good to refuse. In 1947, the brothers sold their interests in PBR to one of the great Australian companies of the post-war era, Repco Limited. Despite his early retirement from PBR, George joined the Board of Directors of Repco at the time of the sale and was to play an important role in guiding the company through the hectic period of growth that lay ahead. Jack pursued other interests and had little to do with the company he and his brother founded or with Repco. While the Patons became rich men, PBR also gained from the sale. Repco provided the business with much-needed capital and it offered a network of service and sales outlets that substantially expanded PBR's markets.



The first Holden - production commenced in 1948 in Melbourne with Repco and PBR as suppliers. Photograph published with permission from Holden Limited.

Repco traces its history back to 1922, only five years before PBR's commencement. Geoff Russell, a 30-year old returned soldier started the Automotive Grinding Company in a tin shed in the inner Melbourne suburb of Collingwood, a very short tram ride from where the Paton brothers started their business. Russell also recognised that the automotive industry had an immense future. While the Patons concentrated on brakes, Russell's business was based on reconditioning engines.

In 1924, Russell moved his business to Queensberry Street Carlton, the very same street that would be the first home to the Paton business three years later. Like many other automotive businesses, Russell was finding it increasingly difficult to obtain sufficient components to keep his business running. So, in 1926, he teamed up with a friend, Bill Ryan, who was then working for a spare parts company and had a wide network in the industry. The two set up a new business, Replacement Parts Pty Ltd and together they thrived. During the 1930s, a network of spare parts stores with their own engineering workshops was set up in regional Victoria. Despite the horrific depression, the network of shops survived. The intense, quiet and studious Geoff Russell and the gregarious, dashing Bill Ryan with his entrepreneurial flair proved to be a winning combination in business.

Repco Limited listed on the Stock Exchange of Melbourne in 1937. It was a combination of the businesses that Russell and Ryan had built over the past 11 years. However, Russell had bought out Ryan's equity before floating Repco. At the time of the float, the Repco businesses employed some 500 people and they manufactured nearly two thirds of all the products they sold. In addition to selling products throughout Australia, the businesses had started to export, a pioneering move for any Australian manufacturer of that era and a lead that PBR would eventually follow.

Repco was to grow into an iconic company, and PBR was to play a central role in its development. From 1947 when PBR was sold to Repco, until the 1980s, Repco and PBR were to create new standards in Australian manufacturing, design and development. The new products they created were eventually taken to automotive markets throughout the world.

Just as the Patons were selling their business, a new industrial giant was taking shape. The name Holden would transform the Australian automotive industry forever and would provide many opportunities on an unprecedented scale for local components manufacturers. The Commonwealth Government had, since the late 1930's been investigating the possibility of establishing an automotive manufacturing industry in Australia. Towards the end of the war, the quest for a local industry based on an all-Australian car began in earnest. In 1944, General Motors – Holden proposed to build a medium-sized, affordable car from 1947 that would be Australian designed and have 90% of its components manufactured in Australia.

With its large range of engine components, Repco was ready, for the first time to supply original equipment rather than replacement parts, thanks to the GMH plan. The acquisition of PBR gave Repco the opportunity to provide GMH with brake components including cups, pistons and cables as well as engine components. The first Holden rolled off the production line on the 29 November 1948. Despite the death of its founding father, Geoff Russell in 1946, Repco was about to embark on its greatest period of growth. For PBR, being part of a larger organisation gave it credibility and corporate support. Had it not been part of Repco, it might never have achieved entrée to General Motors and the future could have been somewhat different.

THE MOVE TO EAST BENTLEIGH

In 1952, plans were announced to build a large, modern plant for PBR on a 35-acre site at East Boundary Road, East Bentleigh. PBR, like many other manufacturers of the era, found that limited factory space, crowded roads and encroaching residential and community developments were forcing them to move to the outer suburbs. New industrial areas began to appear in Melbourne's south-eastern and western suburbs. At PBR's helm was the legendary Jack Pearce who had joined the Paton brothers back in 1930 as a 16-year-old fresh from country Victoria. Despite the lack of formal education, Pearce was a far-sighted business leader who was to take PBR into new fields. The large new site at East Bentleigh that provided ample room for expansion was just one example of how he always looked to the future. The investment in the huge East Bentleigh site carried the imprimatur of the Chairman of Repco, Sir John Storey, who encouraged and supported Pearce in his desire to build PBR into a much larger and dynamic business. Pearce appointed Les Pye to oversee the construction of the plant. Pye was a draftsman by training who in 1952 left the engineering and manufacturing company, McPhersons to join PBR. After the successful completion of the East Bentleigh project he remained with PBR for the rest of his working life.



*In 1954, PBR moved into its new premises in East Bentleigh.
This was the original office block.*



*The aerial photograph shows the first stage of development at East Bentleigh.
The rest of the site was developed over coming years as business expanded.*

Jack Pearce also recognised that the automotive industry was becoming more sophisticated and would make far greater demands on its suppliers to meet the changing technologies. In 1952, he appointed Bart Harvey as PBR's Chief Experimental and Research Engineer. Harvey, an Olympic yachtsman, started a tradition that would endure for the next half century – research and development that was destined to keep PBR at the very forefront of brake design and development. The East Bentleigh site was formerly market gardens and allowed for future expansion. In 1954, PBR moved to its new factory and administration centre. The new manufacturing capacity was soon taken up with many new products such as cast iron master and wheel cylinders. Brake drums for passenger cars and commercial vehicles were the large volume items while brake repair kits and other products added depth to the aftermarket range.

The East Bentleigh site remains the company's headquarters and Australian manufacturing and engineering centre today. It has been expanded and modernised many times as new products and processes have been developed.

At the same time as the East Bentleigh site was being planned, PBR was increasing its network of brake service stations that provided motorists with repairs, maintenance and replacement parts. Until the early 1950s, the Queensberry Street site was a combination of manufacturing, repair and service activities. At the behest of Jack Pearce, a new site in nearby Swanston Street was purchased and became a dedicated vehicle service centre under the management of Graham Peacock, a young mechanic who had joined PBR in 1948. Over the coming years, new centres were opened to accommodate the growing legion of customers and a formidable network commenced under Peacock's management. Ultimately, there were 70 branches throughout Australia and New Zealand employing 700 people and generating \$60 million in sales.

The service stations were a distinctly different part of the business from the manufacturing activities but the two streams worked very closely and together significant benefits were gained from these close ties. Over many years, the service stations provided excellent feedback to the manufacturing operations about the problems encountered in the field leading to better product design and development.

RETURN OF THE BOOM TIMES

The 1950s were a decade of spectacular growth in most parts of Australia. The post-war shortages were by now a distant memory and with the growth came prosperity for most Australians. The returning service men and women had started their families and, at the same time, tens of thousands of migrants poured in from post-war Europe to start new lives. The suburban sprawl became a feature of every city as home ownership became the goal of almost every family.

Living in the suburbs in their new homes, Australians also discovered that car ownership was highly desirable and they bought cars as never before. The market was dominated by the immensely popular Holden but the emergence of other vehicle manufacturers including Ford and Volkswagen created additional customers for the components manufacturers. Other vehicle manufacturers such as Chrysler were to follow. These, plus many imported

and locally assembled brands, gave consumers a vast choice. The booming economy also saw the emergence of a large commercial vehicle market and a large portion of PBR's original equipment market came from truck and trailer manufacturers such as International Harvester, Freuhauf and Haulmark.



A section of the rubber moulding presses.

The huge diversity of makes and models on Australian roads increased PBR's opportunities in the aftermarket while the expansion of local manufacturing created a new original equipment market. PBR and its parent, Repco, enjoyed a decade of sustained growth.

A major development that would have far-reaching implications for PBR occurred in 1957 when the company launched its VH24 power brake for passenger vehicles. For some years, PBR had been supplying trucks with what came to be known as "power brakes". From 1945, an increasing number of trucks were fitted with vacuum assisted and actuated brakes. PBR first entered the power brake market by obtaining a licence from the Bendix Corporation in the United States in 1951. Soon after obtaining the licence, PBR began to design its own components. Its designs for trucks greatly improved



Final inspection of machine components.

the performance of their brakes and made them easier to apply. Technical agreements with Bendix were to continue for many years although PBR's modifications and adaptations improved the original designs. Passenger vehicles that were fitted with PBR power brakes generally carried a sticker on the back windscreen. The sticker was more than just an advertisement for PBR, it was a warning to motorists that the vehicle ahead of them was capable of stopping very quickly!

The VH24 power brake was all-aluminium and to manufacture it, PBR installed an aluminium foundry. The expertise gained in the foundry proved invaluable and the company was soon to become a leader in aluminium design and application for brake and clutch products. Over the coming 45 years, PBR's skills in aluminium fabrication would be one of its most valuable assets and render it a recognised international leader in lightweight brake technologies.

Initially, the VH24 was an aftermarket product but it became so popular and demand was so great that automotive manufacturers began specifying power brakes as original equipment. New versions were designed by PBR engineers and the first customer was the British Motor Corporation (BMC) which, in 1960, fitted the brakes as standard for its Austin Freeway and Worsley cars. The power brake created its own history because PBR had designed and commercialised a product that was superior to the original equipment of the vehicle manufacturers.

PBR had two major competitors that followed the big international automotive manufacturers to Australia. Girling was a British company and Automotive Products was a subsidiary of the American aerospace company, Lockheed. They soon discovered that the Australian automotive market was a relatively small one that could not sustain three brake manufacturers over the long term. They combined their forces to form Girlock. Based in Sydney, Girlock was an innovator of products and processes and for three decades it was a fierce competitor for PBR in both domestic and international markets.



The despatch area in the 1950s. From here, products were distributed to the growing network of PBR service stations.

INNOVATION THROUGH MOTOR RACING

PBR's involvement in motor racing commenced in 1954. A Repco engineer, Charlie Dean, and some of his colleagues had built a racing car called the Maybach some years earlier. PBR's people designed and built the total drum brake system for the car when it was rebuilt for professional racing. Bought by a colourful Melbourne racing driver, Stan Jones, the Maybach won the New Zealand Grand Prix against strong international competition. Clearly, Australian engineering and ingenuity could compete on the international stage and both Repco and PBR saw motor racing as an excellent promotional tool and a test bed for their innovative products. In the Maybach and other cars, Stan Jones, with Repco and PBR sponsorship and technical support, was to forge a successful motor racing career. Repco and PBR also supported other local racing drivers such as Reg Hunt and Bib Stillwell during what was a golden era for the sport in Australia.



PBR's association with motor racing included sponsorship of the Templestowe Hill Climb venue in Melbourne. This giant sign was subsequently moved to a new track known as Rob Roy when Templestowe's land was required for housing.

In 1958, a young Australian racing driver who had gone to Europe three years earlier to further his career approached Repco for technical assistance. That low-key approach from Jack Brabham was the start of a long and successful partnership that was eventually to rewrite motor racing history. Brabham was to win the Formula One World Championship three times (1959, 1960 and 1966) and, in 1966, he became the first driver ever to do so in a car carrying his own name - the Repco Brabham. Knighted at the end of his career, Sir Jack became an immortal Australian sporting hero. The successes of Brabham and other drivers who raced Repco Brabhams brought world-wide recognition for Repco and PBR which designed and supplied the disc rotors for these and other racing cars. Until then, racing cars had used disc rotors of cast steel and, after severe use, they would buckle. With its superior metallurgical knowledge, PBR made cast iron brake rotors that proved much more reliable and gave Brabham and others a very clear competitive advantage.

PBR's association with motor sport was a long and successful one and opened many doors to international markets. Its support for the sport was not limited to Jones and Brabham. In 1956, the PBR racing service van made its appearance at the Australian Grand Prix held at Albert Park, an inner Melbourne parks and recreational centre. For a number of years, the van was a familiar sight at numerous race tracks providing expert support for many drivers and their vehicles. In return, PBR learned much about how brakes performed under extreme stress. The motor racing activities were supervised by Vin Keane, the company's Chief Experimental Engineer. He had joined Repco in 1956 as a cadet engineer and was assigned to PBR where he rose rapidly to become Product Engineer in 1961 and in 1965 he was appointed Chief Experimental Engineer.

By the 1970s, motor racing had become a very expensive sport, particularly at the international level. Repco and PBR gradually phased out their activities as costs increased and times became tougher.

THE FABULOUS SIXTIES

The 1960s are often seen as a halcyon period for the Australian economy. Despite a brief recession in 1961, the nation enjoyed full employment for most of the decade. The spread of the suburbs that had started in the 1950s continued on a wave of optimism and affluence. The nation's industrial engine was growing to accommodate the seemingly unstoppable tide of consumer confidence and a minerals boom in the mid-1960s brought new wealth from exports. In 1960, Ford commenced manufacturing the Falcon and by 1962, GMH had produced one million Holdens.

It was in this era that Repco's far-sighted recruitment and training programs proved to be an invaluable investment. A cadet engineers program ensured that the company was well stocked with bright young engineers, many of whom rose through the ranks to take on senior management roles while others were responsible for the exceptional product and process advances that kept Repco and its subsidiaries at the forefront of manufacturing in Australia.



*Design and development was a key feature of PBR's activities.
The old drawing boards were replaced by computer technology in the 1980s.*

Concurrently, Repco had one of the nation's best apprenticeship schemes that produced large quantities of well-trained trade and technical staff. An apprentices' centre in North Melbourne was regarded as a model and was visited by other organisations and governments keen to learn from the Repco experience. The cadet engineers and apprentices were assigned to Repco's businesses and PBR gained many of its talented people through these two schemes.

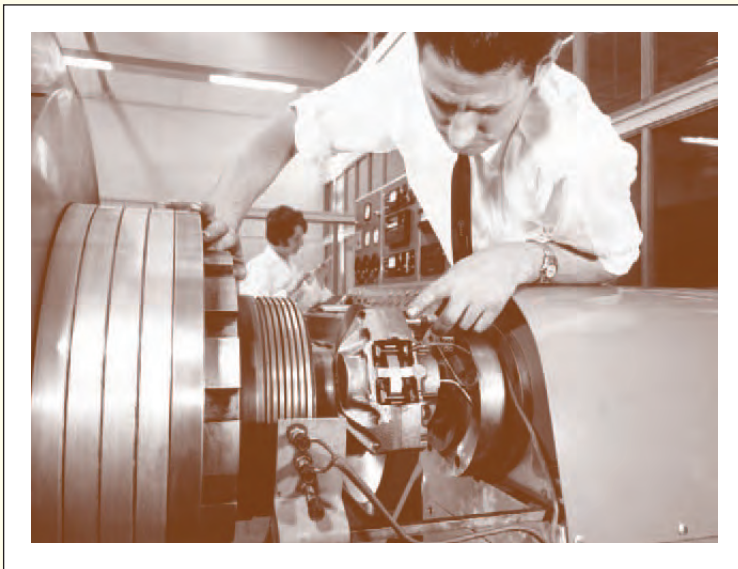
During the 1960s, PBR turned its attention beyond Australia's shores and towards the global automotive aftermarket. With the strong support of Repco's Chairman, Sir Charles McGrath, and PBR's General Manager, Jack Pearce, executives went in search of export opportunities. Sir Charles, who had succeeded John Storey, was a consummate networker in Australia and overseas and he saw the possibilities of developing export markets for Repco's businesses. Like its parent, PBR was able to capitalise on its outstanding product technologies and on the promotional opportunities that came with the great motor racing successes of Jack Brabham.

Many long and arduous overseas trips were undertaken and PBR products soon began to appear in repair and replacement outlets (commonly known in the industry as aftermarkets) around the world. Jack Pearce, Les Pye, Jack Evans and others went from the southern tip of Africa to the far north of Europe in search of export opportunities. In 1965, PBR appointed David Tennent as its first official Export Manager and he spent nearly six years on the road developing new markets. The work of these and other people helped to build an outward looking culture that would prove to be a critical factor in PBR's long-term future.

By the early 1960s, PBR was supplying brake products and related equipment to a diverse range of car, truck, tractor, trailer, caravan and even boat manufacturers and assemblers in Australia. It had pioneered many concepts and was an early participant in the development of disc brakes. To expand its product range, it also obtained licences to import equipment such as power steering kits from Bendix US.

It was during this period that PBR began to look seriously at disc brakes. Its first calipers were manufactured in 1965 at East Bentleigh under licence from Dunlop in the United Kingdom. Just as they had with other products, PBR's imaginative and resourceful engineers adapted the calipers over the coming years to meet the requirements of the local market. Just how significant the caliper would be in the future development of the company was difficult to foresee at that time.

By 1964, 10 years after the move to East Bentleigh, PBR's payroll passed 1000 people for the first time. Along with the expansion of manufacturing activities, the network of brake service stations continued to grow and a new one was opened in nearby Caulfield to coincide with the tenth anniversary of East Bentleigh. By this time, the company was supplying brake products to GMH, BMC, Ford, Chrysler, Volkswagen, International Harvester and AMI which was then building the Rambler range of vehicles in Australia. Some of the local manufacturers also exported vehicles, mainly to the Asia-Pacific, Middle East and Southern Africa regions and wherever their vehicles appeared, PBR was able to establish a presence in the respective aftermarkets.



*The first calipers manufactured by PBR were in 1965.
Here Vin Keane, Chief Experimental Engineer, tests an early disc brake
assembly on a dynamometer.*



*The first catalogue for PBR calipers, circa 1965.
The original calipers were made under licence
from Dunlop in the United Kingdom.*

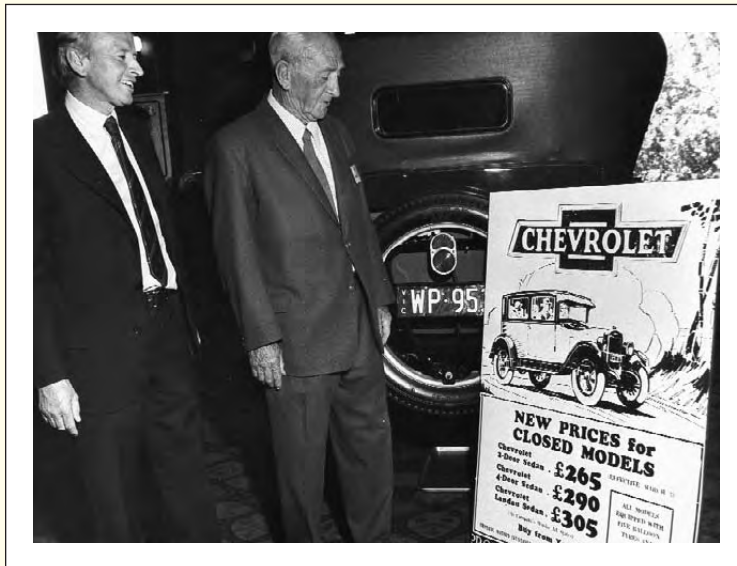
From its strong focus on brakes and related components, PBR history took a strange twist in 1966. The PBR Vehicle Manufacturing Company was formed and it built a purpose-designed vehicle called the Trademaster. This was an ingeniously designed, electric-powered milk delivery vehicle that enjoyed a short lifespan due to the cost of production and tiny market. Management recognised the folly of its action and PBR never again strayed far from its core activities.

In 1967, Jack Pearce, who had made PBR one of the largest and most profitable businesses in the Repco empire, was appointed a director of the parent company and, in 1968, he was succeeded as General Manager of PBR by Sam Newton, a Repco executive. That year, George Paton retired as a non-executive director after 20 years on the board. Two of PBR's founding fathers were severing their ties with the business although Jack Pearce was to remain a director of Repco until 1970. After his years at PBR, he was appointed General Manager of Repco Textile Machinery Company, a joint venture with CSIRO, which he managed successfully until 1973. Six weeks after his retirement, he died, having spent 43 of his 59 years with PBR and Repco.

By the late 1960s, PBR had grown into a group of businesses that had built on its brake products expertise to manufacture a broad range of industrial products such as compressed air systems, control valves, hydraulic hoses and even power boat steering systems. Diversity was seen as a virtue, largely because the company was not dependent on any one industry sector. Meanwhile Repco had become a manufacturing and trading powerhouse. Under the inspirational leadership of Sir Charles McGrath, Repco was a darling of the Australian Stock Exchange and one of the nation's few truly international companies.

OIL SHOCKS AND INFLATION

If the 1950s and 60s were halcyon for Australians then the 1970s were to provide a jarring contrast. For most of the decade, the domestic economy was deeply stressed by the effects of inflation. Many overseas economies were also impacted and national governments struggled desperately to bring things under control. One of the key factors driving inflation from 1973 was oil pricing. OPEC, the Organisation of Petroleum Exporting Countries, was



*Managing Director of Repco, Tony Avery (left) with George Paton.
The display featuring a 1927 Chevrolet, was part of PBR's
50th anniversary celebrations in 1977.*

established and managed, for the first time, to form a united bloc for oil producers. Its members increased the price of crude oil in two massive leaps - in 1973 and again in 1979. These cost increases became known as the two "oil shocks". In both cases, crude prices increased by 300%. Australians were to learn that they could not protect themselves from international economic trauma such as these "shocks".

With oil prices rampant, automotive manufacturers around the world turned their attention to building more fuel-efficient vehicles. Smaller, more economical vehicles were rushed into production and overall vehicle weight became an important consideration. PBR again showed a remarkable ability to respond to the needs of its customers and lighter calipers, brake cylinders and other components were designed and quickly accepted by the automotive market.

Winning the 1972 Aluminium Casting of the Year Award from the aluminium industry was an important milestone for PBR. The award was for a semi-trailer brake shoe, a specialised product. Most importantly, it affirmed PBR's leadership in the design and production of lightweight, aluminium products, a status that would serve the company well for many years to come.

Throughout the 70s, there were a number of management changes and organisational restructures at PBR and Repco. Jack Newton, who had succeeded Jack Pearce in 1968, was replaced by John Morgan in 1971. Morgan was then replaced by Don Peebles in 1975. It was a period of great contrast to the previous years when one General Manager, Jack Pearce, had led PBR for the best part of two decades.

It was not only the oil shocks and turbulent economic times that created change in the Australian automotive market during this decade. From the mid-1970s, the Japanese vehicle manufacturers, Nissan, Toyota and Mitsubishi commenced full production in Australia to comply with local content regulations. Until then, they had assembled and/or fully imported their models and made limited use of local components. Many of the new, locally made models were popular with Australian motorists and rapidly gained market share. Their presence again expanded opportunities for PBR and new product designs were progressively introduced. Some of these manufacturers insisted on brakes designed to Japanese specifications so PBR arranged

technical licence agreements with Japanese brake manufacturers such as Akebono and JKC. Akebono provided caliper licences while power booster licences came from JKC. Both these companies, in turn, had licence agreements with PBR's old friend, Bendix, and this long-standing relationship smoothed access to the Japanese companies.

At this time, PBR took an initiative that would set it on a course leading to domestic and international success in the years ahead. That initiative was the design and manufacture of the aluminium caliper. With its long and successful track record in aluminium fabrication, PBR quickly gained the attention of automotive manufacturers who saw aluminium calipers as an excellent means of achieving weight reduction. Amongst the first to take up aluminium calipers were General Motors Holden and Nissan. GMH fitted the calipers to the 1976 Torana, its mid-sized vehicle while Nissan fitted them to its popular small car, the 1977 Datsun 120 Y. Other contracts were soon won as the qualities and benefits of the aluminium products were realised. PBR had turned the problems of the 70s into opportunities and demonstrated its ability to design and develop its own products and processes to meet the demands of a rapidly changing environment. In the years to come, PBR's expertise in aluminium design and manufacture would set it apart from most of its international competitors.

In 1980, George and Jack Paton both died. George was 84 and Jack was 80. They had been out of the business that they started as a partnership for more than 30 years and there were no descendants who had stayed at PBR to carry the Paton name. George had stayed on as a non-executive director of Repco until 1968 but he had little to do with the day-to-day activities of PBR. George's son, John, did join the company in the 1940s as a mechanical engineer but he left in the early 1950s to pursue a farming career. Nevertheless, the Patons had left a rich heritage for others to take forward.

AN ERA ENDS, ANOTHER BEGINS

By the end of the 1970s, Repco was no longer the force it had once been, even though it still had many superb assets. As the 1980s commenced, Repco was struggling to re-invent itself and its financial performances in the early part of the decade fell well short of investors' expectations. During the 80s, companies with good assets but low share prices attracted the attention of a new breed of company, the corporate raider. Instead of painstakingly building businesses over many years, the raiders were more interested in turning quick profits by buying under-valued companies and selling off their assets. Despite divesting some of its businesses and attempting to modernise itself, in late 1985 Repco fell victim to one of the corporate raiders, Ariadne.

Soon Ariadne was selling off most of the manufacturing assets of the once mighty Repco. In mid-1986, Repco's Brake and Clutch Division, was sold to the British based industrial company, BBA Group PLC. The Division comprised PBR, the Repco Clutch business and Super Seals, an oil seals and rubber business. One of the very recent acquisitions made by Repco was also rolled into the Division. This was PBR's old competitor, Girlock, which had been losing money but was a magnificent fit with PBR's activities. Acquired in 1984, Girlock had also designed and manufactured aluminium calipers, was an exporter and, had a chain of brake service stations similar to those of PBR. PBR also gained some of Girlock's key people. Two young engineers, Derek Hodgson and Nui Wang were to have a profound impact on PBR in the coming years. The sale of the Repco Brake and Clutch Division did not include the 70 PBR and Girlock brake service stations. These were retained by Repco and subsequently sold to another buyer.

The new business was named Brake and Clutch Industries Australia (BCIA).

For PBR, a near 40-year history came to an end. These had been years of progress and prosperity and being part of the Repco "family" had many advantages. These included access to capital and the synergies that Repco offered such as an automotive industry heritage, a commitment to product and process innovation, international marketing and manufacturing excellence. Repco had also attracted and retained some of the nation's best people who wanted to develop careers with an industry leader. Over the years, a number of these had joined PBR and had left their mark.

LOOKING BEYOND AUSTRALIAN SHORES

While Repco was struggling with its own problems, the entire manufacturing sector in Australia began to change dramatically. From the early 1980s, governments of the day realised that Australian industry could not remain protected by high tariffs and quotas. The domestic market was small and it offered limited opportunities for growth. For the Australian economy to realise its potential, industry had to look beyond Australia's shores. The booming economies of Asia were seen as logical targets for Australian exporters. Leading exporters, including PBR, had established a presence in Asian markets over the previous decades and building on existing markets and relationships was a logical move.

In 1984, the Minister for Industry, Senator John Button, introduced what became known as the Button Car Plan – a long-range blue print for the automotive industry. The plan centred on a phasing down of tariff protection over a 20-year time frame. When introduced, the plan was highly controversial but it was generally agreed that it heralded a new era for the automotive industry.

PBR had long been an outward looking company. From the 1960s it had established export markets and by the 80s its products could be found in some 50 countries. The PBR brand was internationally recognised and highly regarded. However, its products were largely sold to the aftermarkets and very little to the original equipment manufacturers. The newly acquired Girlock had also been an active exporter and had made a major breakthrough in the American market in 1981. In that year, Girlock announced that it had won a contract to supply original equipment brake products to the Chevrolet Division of General Motors. The vehicle to be fitted with Girlock brakes was the 1983 Corvette, the quintessential high performance American sports car. Soon after the 1984 Corvette was on the market, Girlock had been acquired by Repco and it became part of PBR. Combining the two organisations created a formidable new team in the North American automotive market – a team capable of establishing a presence in the original equipment market.



The Chevrolet Corvette was the first American car to be fitted with PBR brakes as original equipment in 1984. This is the 1986 model.

PBR's entry in the world's largest automotive market might have been short-lived had it not been for an Australian engineer, Derek Hodgson, who had visited Detroit in 1980 as Girlock's Assistant Chief Engineer. He realised that if an Australian supplier was to win the hearts and minds of the big manufacturers, it would have to have a presence on their doorsteps. He returned in 1982 to set up an engineering centre which was to become pivotal to the long-term relationships PBR built, after acquiring Girlock, with the American vehicle manufacturers. As PBR celebrated its 75th anniversary in December 2002, Hodgson, was now President of PBR International USA Ltd and had been in Detroit for 20 years. The engineering centre he established had grown to accommodate the company's burgeoning requirements in North America.



*Derek Hodgson, the ex-Girlock engineer
who established the Detroit engineering
centre in 1982.*

As the 1980s unfolded, it became clear that there were two types of manufacturers in Australia – those that could compete successfully on international markets and those that could not. The latter group were living on borrowed time, or were already in their death throes.

PBR recognised that being able to meet the needs of international markets required new levels of innovation, manufacturing excellence, product quality, logistics and service standards. Product innovation was, of itself, not enough to meet the requirements of the fiercely competitive international marketplace. Manufacturing processes were needed to ensure that PBR products met the quality, price and delivery expectations of major customers. Over the coming years, new processes and process technologies were introduced that gave PBR the essential competitive edge. A Quality Department was established and the company began to invest in new computer technologies. The groundwork done during the 80s was to prepare the company well for the growth opportunities that lay ahead.

GOING PUBLIC - AGAIN

Only three years after acquiring BCIA, BBA PLC, decided in 1989 to offer local investors 42% of its Australian subsidiary by way of a float on the Australian Stock Exchange. For BCIA, this would be the second time it had been part of an Australian public listed company having been part of the Repco group for nearly 40 years. The new company was called Pacific BBA and the float, on 2 November 1989 was an outstanding success despite the early signs of a looming recession.



Graham Kraeche, who was Managing Director of Repco Brake and Clutch Division when it was sold to the UK-based BBA Group PLC. In 1989, he became Managing Director of Pacific BBA Limited, PBR's new parent company.

The Managing Director of this new company was a charismatic former Adelaide man, Graham Kraeche who had been Director of Repco's Brake and Clutch Division since the early 1980s and had remained as Managing Director of BCIA. Relatively unknown at that time, Kraeche was to become one of Australia's most admired chief executives and a prominent company director.

In the late 1980s and early 1990s, diversification was still seen as a virtue and Pacific BBA saw itself as a diversified manufacturer. Even though most of the revenue and profit came from BCIA, the company promoted its diversity on the grounds that it had an industrial plastics business, Viscount, which was acquired shortly before the float and small businesses in the fibreglass and fire protection industries that had previously been acquired by BBA. Pacific BBA was also soon to acquire construction products businesses as part of its diversification plans.

By the beginning of the 1990s, the Australian economy was in deep recession and many companies were struggling to stay in business. Fierce cost-cutting resulted in many thousands of workers losing their jobs and unemployment reached a staggering one million. BCIA was not immune from these difficult times and it was forced to reduce staff at East Bentleigh by 600. The fledgling Pacific BBA reported a pre-tax operating profit of \$2.7 million for the first half of 1991 compared with a profit of \$10.25 million for the first half of 1990. Before the recession ended, there would be more than one million people unemployed throughout Australia, an all-time record.

Despite the recession, Pacific BBA's plans for the future were being formulated. Shortly after the listing, Kraehe appointed BCIA's Manufacturing Director, John MacKenzie, as Managing Director of BCIA. MacKenzie, who had joined BCIA in 1986, had extensive manufacturing and general management experience in Australia, South-East Asia and the United States. He saw BCIA as an international business and set about making the vision a reality.

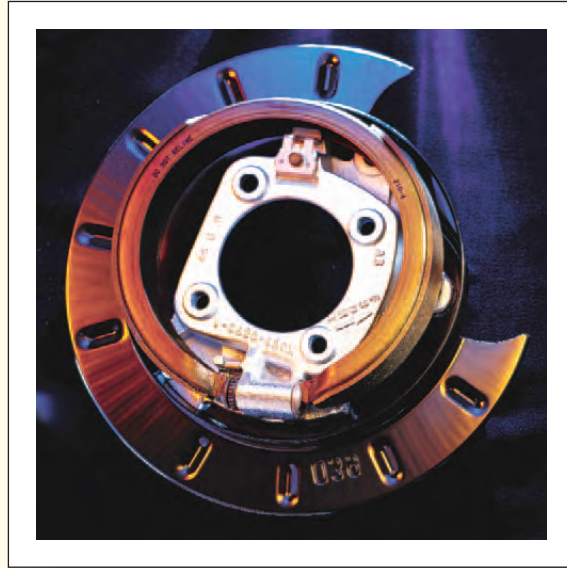
NEW PRODUCTS, NEW FRONTIERS

At the beginning of the 90s, most of PBR's exports were still to international aftermarkets despite the success of the Corvette business. But PBR's eyes were firmly fixed on the huge original equipment markets of North America and Asia. Its products, particularly its lightweight calipers, were seen as international leaders and had gained the attention of some of the world's largest automotive manufacturers. Kraehe and MacKenzie were ready to take the next step towards the internationalisation of the company.

In 1991, the opportunity for BCIA to establish a manufacturing business outside Australia came when the Malaysian government sought expert assistance to develop its infant automotive industry. Pacific Brake and Clutch Industries (Malaysia) was formed to provide brake and clutch components to Proton, the Malaysian national car. The business was set up as a joint venture with Heavy Industries Corporation of Malaysia Berhad (Hicom), a government-owned investment company. To establish and manage the business, BCIA sent Mike Delacorn, an engineer and manager who had many years' experience in Asia. Within a year, the Malaysian plant was built, commissioned and running smoothly and it proved to be a very successful first step for the company.

In the same year, Pacific BBA acquired a 49% interest in Australia's largest friction materials manufacturer, Bendix Mintex. The Bendix name had been associated with PBR from the very early days when the Paton brothers imported products from the Bendix Corporation in the United States. Later, Bendix products were manufactured under licence by PBR. By 1991, Bendix was part of Allied-Signal Inc, the world's largest friction materials manufacturer. Allied-Signal retained a 51% interest in the Australian operations until it also fell victim to takeover. Pacific BBA's relationship with Bendix Mintex was to be a profitable one for both companies. Bendix generated healthy dividends for Pacific BBA and it gained a great deal of original equipment business from its close association with BCIA.

BCIA launched a revolutionary new product in 1992 that would confirm its place as a global leader in brake technologies. That product was the Banksia park brake. Remarkably, the park brake's design had remained virtually untouched for decades. Designed at East Bentleigh by an engineering team led by Nui Wang, the Banksia was based on a single, hoop-shaped shoe. It superseded a heavier, relatively complex design based on two shoes. The Banksia's design had only 13 parts compared with 31 for the conventional design. Its advantages included reduced weight, easy maintenance, longer life, lower cost and simple part replacement. Within four years of its launch, it was being fitted to vehicles manufactured by General Motors, Ford, Mitsubishi, Daewoo and Ssangyong. Others, including Toyota, were to follow. By the end of the decade, the company was manufacturing seven million Banksias per annum at East Bentleigh, many of them destined for the export markets of



The Banksia park brake.

North America and Asia. By any measure, the Banksia was an outstanding success. The engineering team led by a former Girlock employee, Nui Wang, had carried on the tradition of bold creativity that started with the Paton brothers and had been passed on down the years. In 2001, Nui Wang, then the company's General Manager - Advanced Products & Technologies, was awarded the prestigious Clunies Ross National Science and Technology Award "as recognition of the influence he has had on the automotive industry and a generation of engineers".

The PBR brand was so well known that, in 1993, the decision was taken to revert to it for the company name. BCIA was retired and PBR Automotive (and, subsequently PBR International), became the corporate name. In the same year, PBR's ownership was again in transition. The British-based BBA PLC decided to sell its 58% interest in Pacific BBA and the shares were quickly snapped up mainly by Australian investors. As part of the divestment, Pacific BBA was eventually to change its name so that the relationship with BBA would be completely severed. A staff competition was held and the name Pacifica Group Limited was chosen in 1997.

In late 1994, the Managing Director of Pacific BBA, Graham Kraehe, announced his resignation to take up a position as Chief Executive Officer of Southcorp, a company that was approximately five times the size of Pacific BBA. Kraehe's departure was met with consternation by the investment community because of the reputation he had built as an outstanding leader and manager. Yet, at the workplace, it was business as usual and the momentum at PBR was frenetic. 1994 was to be a watershed year for PBR and it was named Australian Exporter of the Year (Large Manufacturer Category) in recognition of its successes in overseas markets. These successes, however, were only just beginning.

SETTING UP IN THE STATES

For PBR, the North American market had thus far been a specialised one. Over the previous 10 years, it had been supplying brake products for sports and high performance vehicles. The original contract to supply the Chevrolet Corvette had led to other models such as the Chevrolet Camaro, Pontiac



The plant at Columbia, South Carolina.



The Sierra, a General Motors' light truck being tested at an Australian proving ground in 1998. These light trucks and SUVs (sports utility vehicles) became immensely popular in North America from the mid 1990s providing PBR with a huge market.

Firebird and Ford Mustang. Despite this success, these models represented a prestigious but relatively small market. The makers of these vehicles selected PBR brake products because their lightness added to performance. But in 1994, PBR made the breakthrough that would take it into the mainstream of the world's largest automotive market where volumes were measured in their millions. It announced that it had won long-term agreements to supply calipers and Banksia park brakes for General Motors' high-volume passenger vehicles and light trucks. Finally, the years of hard grind, building credibility and networks were about to pay off.

At the time, PBR's overseas sales were valued at \$50 million per annum for both original equipment and aftermarket. The new business was expected to add \$45 million a year at full volume and, in total, was valued at \$200 million over the coming four or five years. Further large orders were in the pipeline and these were to be announced over the coming two or three years.

The arrangement was struck with Delco, a subsidiary of General Motors. Delco was one of the world's largest components manufacturer and supplier and its customers included automotive companies other than General Motors. Subsequently, General Motors floated Delco as an independent company and its name was changed to Delphi. Despite its changed status, Delphi's relationship with PBR was to be an enduring one.

The entry into the world's largest automotive market presented PBR with a dilemma - how best to supply the massive volumes demanded by the customers. While exports from East Bentleigh were growing rapidly, the site could not cope with the projected volumes, even after a planned \$25 million upgrade. There was compelling logic to set up manufacturing facilities much closer to the new customers and, in 1996, the company announced plans to establish a plant at Knoxville, Tennessee. The new plant would be a high-volume producer of aluminium and cast-iron calipers. By this time, the original orders from Delphi that were to add \$45 million a year to PBR's sales had burgeoned to more than \$200 million and there was more to come.



*The Bob Bondurant School of High Performance Driving in the United States.
The Ford Mustang Cobras are fitted with PBR brakes.*

Work on the plant at Knoxville commenced immediately and it was officially opened in late 1998. Delphi was offered, and took, a 49% share in the Knoxville plant in late 1997. Its completion coincided with a period of great economic prosperity in North America and car and light truck sales were soaring beyond all expectations. In 1999, the information technology and telecommunications boom was reaching a crescendo and a record 17 million new vehicles were registered in the United States. PBR's new plant was placed under immense pressure as demand was exploding. Concurrently, exports of Banksia park brakes from Australia were at record levels and domestic demand was also exceptionally strong.



Foundry workers at Knoxville, Tennessee

At the time that plans for Knoxville were announced, the PBR management team had already determined that a second US plant would be required to satisfy long-term demand. In early 1999, the company announced that a second plant would be built and Columbia, South Carolina had been selected as the site. The Columbia plant was to be different to the one at Knoxville. Knoxville was a high-volume plant producing one product line – calipers. Columbia would be smaller and would produce a diversity of products. It was

also designed for expansion in the knowledge that many new opportunities were opening up as the reputation of PBR and its brake technologies continued to grow. The Columbia plant was completed and successfully commissioned in 2000 and production commenced immediately. Much of the experience gained at Knoxville was put to good use at Columbia and, as a result, production commenced a remarkable 13 months after the ground-breaking ceremony.

By 2000, PBR was generating \$350 million per annum in sales in North America - more than its entire sales only two years earlier. By now, total sales were over \$760 million.

THE ASIAN EXPERIENCE

Success in Malaysia encouraged PBR to seek out other opportunities in Asia. The economies of Japan, South Korea, Thailand and the Philippines were, in the early 1990s, amongst those booming at twice the growth rates of Australia, North America and Europe. It was not only the Australian companies that turned their eyes to Asia, many of the world's largest American and European companies were also anxious to build their businesses in this booming region.

For a period it seemed that growth in Asia was limitless and investors sought out opportunities with great exuberance. But the economies that had seemed unstoppable suddenly went into a steep decline in the second half of 1997 and the "Asian meltdown" as it became known, sent shock-waves throughout the region and the rest of the world. For PBR, the meltdown created some short-term discomfort but did not impact heavily on its results.

Plans for PBR to enter the Korean market were announced in 1992 when an agreement was reached to design and supply brake systems for the Ssangyong Musso, a four-wheel-drive vehicle. A year later, this was followed with licence agreements for calipers and Banksia park brakes from two Korean components manufacturers, Daewoo Automotive Components and Tae Chul Industrial Co. Daewoo Automotive Components later became the Korean arm of Delphi. A sales office was established in Seoul in 1997 but it was a short-lived exercise due to the meltdown which left the Korean industry particularly hard hit.

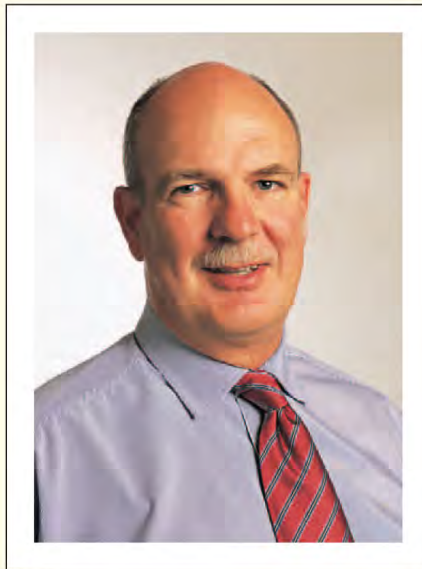
To enter the Japanese market, any Australian manufacturer needs to take a long-term view and ample patience. PBR's approach to the world's second largest automotive manufacturing nation was unveiled in 1996 when the company announced it had signed a licence agreement with Japan Brake and Industrial Co Ltd (JBI). The agreement was to cover the manufacture under licence of PBR's Banksia park brake in Japan. By 1996, PBR had already enjoyed a 15-year relationship with JBI and saw the agreement as a conduit that would eventually yield positive results.

The Asian economic crisis of 1997 also caused plans for a new PBR plant in Thailand to be put on hold. However, space was soon available at a newly established joint-venture friction materials plant which Bendix Mintex and Pacifica had built at Rayong. From this base, PBR was able to commence operations in 1998 supplying brake systems to the Automotive Alliance Thailand, a Ford/Mazda joint venture. The appointment of Busra Rungsa-Nguanvong as General Manager of PBR Thailand created a small piece of history – she was the first woman to be appointed head of a PBR business. By the late 90s, it was clear that Thailand was fast becoming the new automotive powerhouse of Asia. It had attracted major investments from most of the global vehicle manufacturers and had positioned itself as the centre for automotive manufacturing in the ASEAN region.

The economic recovery in most Asian markets was surprisingly fast and, by late 1998, PBR was seeing signs of stronger demand and this was sustained in 1999. The heady days of the early to mid-90s were over and steady rather than spectacular growth was to follow. By 2002 Japan remained in recession but the world's last great untapped market, China, was continuing to open its economy and the automotive manufacturers were turning their attention to its potential.

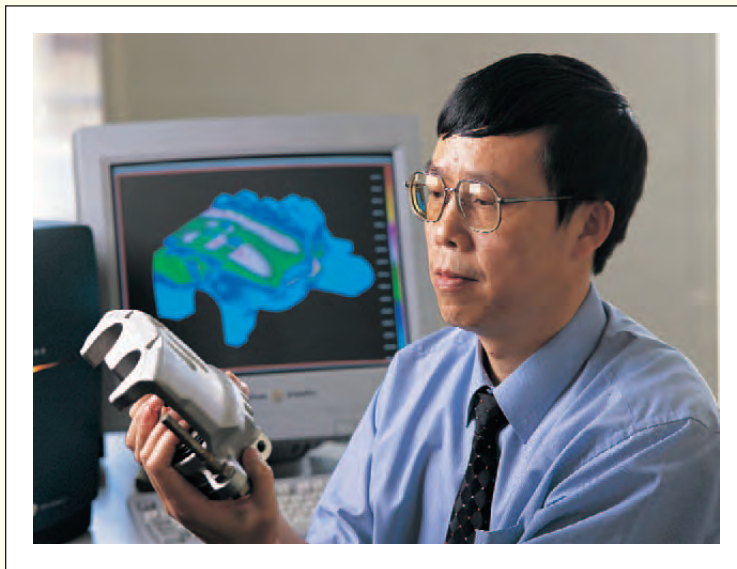
NEW DIRECTIONS FOR THE NEW MILLENIUM

Towards the end of the 20th century and beginning of the 21st century, the information technology and telecommunications boom reached a crescendo. The wave of optimism that swept through much of the western world drove stock markets to record highs, and fuelled consumer spending. Venture capital was readily available to the new breed of young IT entrepreneurs and terms such as the "new economy" and "the knowledge economy" became the buzz phrases of the times. Like all booms, the era came to a sudden end and the ephemeral start-up businesses disappeared. The "old economy" companies that offered genuine products and services survived. However, it was well-recognised that the new technologies were permeating every aspect of business and that "the knowledge economy" was more than just a phrase - it was the high-value commodity that offered any business a competitive edge.



John MacKenzie was PBR's Manufacturing Director before becoming Managing Director in 1990 and Managing Director of Pacifica Group Limited, PBR's parent company in 2001.

The year 2000 heralded a significant shift in direction for PBR and its parent, Pacifica. Recognising that the company's future lay in its intellectual property rather than traditional manufacturing, it announced in its 2000 Annual Report that it would transform itself from a diversified manufacturing company into an industrial technology company. It was clear that only one of Pacifica's businesses held world-class intellectual property and that was PBR. Therefore, "industrial technology" soon became "automotive technology" and plans for Pacifica to divest itself of its plastics and construction products businesses were announced. At the same time, the company detailed how it would move from traditional manufacturing to its new role. This included establishing strategic alliances with other organisations including manufacturers, research institutions and universities and increasing its own investment in research and development. Manufacturing would still be undertaken, but the emphasis would be on the disciplines where the company had a clear, competitive advantage. Non-core activities would be outsourced or divested. It was a bold strategy designed to secure the company's place in the rapidly growing international automotive industry.



Dr Yuejin Li working on new generation brake technologies in 2000.

To underline the quality of PBR's intellectual property a new product was unveiled in March 2000 that was as radical in design as the Banksia park brake. At the Society of Engineers conference in Detroit, Nui Wang and his team launched the Auriga, a totally new approach to rear brake thinking. The Auriga was to replace the rear drum brake which was still being fitted to 75% of new vehicles in North America, Europe and Asia. The Auriga design required half the number of parts of the traditional drum brake and offered many benefits including longer wear, less maintenance and greater performance. By 2002, it had become part of a total, new generation brake system being designed by PBR.

In June 2001 John MacKenzie, the long-serving Managing Director of PBR was appointed Managing Director of Pacifica Group, succeeding Barry Jackson who had been in the role for six years. The MacKenzie era at the head of PBR had been one of extraordinary expansion. In 1990, PBR's revenue totalled \$189 million and by 2001 this had grown to nearly \$900 million. From its domestic base in Australia, PBR had spread to North America and Asia and was supplying not just components, but entire brake systems to most of the biggest names in automotive manufacturing.

The evolution to an automotive technology company picked up pace during 2001 with the introduction of Pacifica Group Technologies, a new division dedicated to research and development. To manage the division, MacKenzie appointed two of PBR's most experienced engineers, Mike Delacorn and Alan Stevens. Their brief was to develop the company's intellectual properties in both products and processes. A key objective was to shorten the lead time between the creation of new designs and their ultimate commercialisation.

A major focus for the Delacorn-Stevens team was electronic brake actuation, or "brake-by-wire" as it was commonly known. Electronics were becoming an increasingly important aspect of automotive design prompting some industry commentators to say that the electronic components would soon be of greater value than the metal in most vehicles. For Pacifica Group Technologies and PBR, the first step in brake-by-wire was an electronic version of the Banksia. This would be followed by total brake systems. By the end of 2002, the electronic Banksia was close to commercialisation.



"Brake-by wire" takes shape in 2000 with PBR engineers Mark Findlay (left), Nui Wang (centre) and Alan Stevens (right). This was an early stage of the development of the electric Banksia park brake.

The "By-wire" technologies received the imprimatur of the Victorian Government in 2002 and it provided a grant of \$4.73 million towards the cost of establishing a centre of excellence to be known as the Research Centre of Advanced By-wire Technologies (RABiT) at East Bentleigh. A consortium comprising of Pacifica Group Technologies, the University of Melbourne's Department of Mechanical and Manufacturing Engineering, the Bishop Technology Group and Swinburne University of Technology was established to make the centre a reality. Yet another step had been taken towards the vision of the automotive technology company.

Meanwhile, the search for strategic partnerships quickly yielded results. In September 2001, PBR entered into an exclusive agreement for the supply of aluminium calipers and Banksias in North America to the global industrial giant, Robert Bosch. Bosch, a huge manufacturer and supplier of automotive components, was an ideal ally for PBR as it offered access to new markets and Bosch's products were largely complementary to PBR's. Bosch had acquired the Bendix Corporation and, through this connection, already had a

long-standing relationship with PBR in North America. The agreement gave PBR entrée to Bosch customers including Ford, Daimler-Chrysler, Mitsubishi, Mazda, BMW and Nissan in the United States, Canada and Mexico. The relationship was quick to bear fruit and two large orders to supply Bosch customers followed within a matter of months.

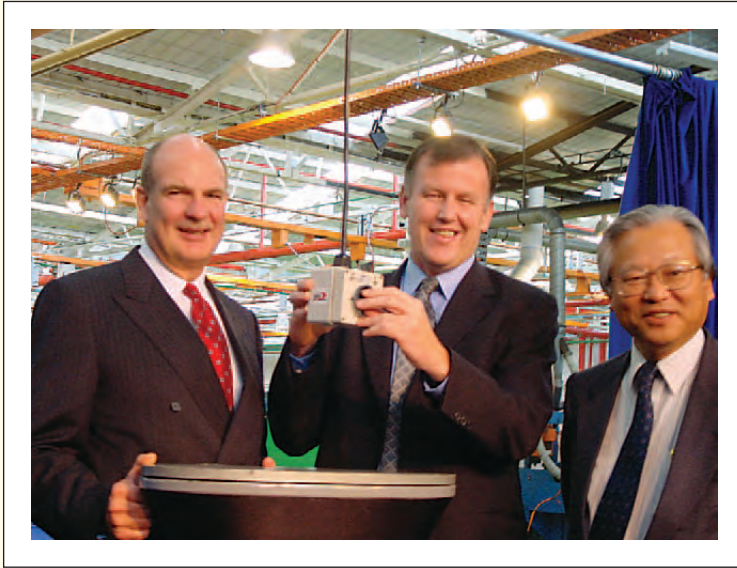
SEVENTY-FIVE YEARS ON

Seventy-five years after George and Jack Paton formed a partnership and opened a small repair shop, the world was a vastly different place and so was the company they started. In the year 2002, PBR's operations spanned Australia, Asia and North America and plans to enter Europe were taking shape. The company's headquarters remained at East Bentleigh but the site had undergone many transformations and was about to become the new research centre for By-wire technologies. Other research and development was in full flight as the company relentlessly pursued its quest for world leadership in brake technologies.

In Asia PBR had manufacturing centres in Malaysia and Thailand and its products were also fitted to Korean and Chinese-made vehicles. There were signs too that the Japanese market was opening up after many years of patient nurturing by PBR executives. In North America the plant in Knoxville was fully occupied with the requirements of the automotive giants. At the same time the Columbia plant was being expanded to accommodate new business including the first orders to supply complete corner modules. The potential for far more business in the years ahead was clearly evident.

By 2002, PBR was supplying all automotive manufacturers in Australia – General Motors, Ford, Mitsubishi and Toyota. The company was also exporting Banksia park brakes to North America from its East Bentleigh plant.

Across the globe, the company employed around 1600 people. Total sales for 2001 were nearly \$900 million and of this, over \$700 million came from international and export markets. North America had become PBR's largest market. Of the General Motors vehicles manufactured in 2001 in North America, 62% were fitted with PBR brakes. Globally PBR products were fitted to a staggering 4.1 million new vehicles in 2001.



Pacifica's Managing Director, John MacKenzie (left) with the Victorian Minister for Manufacturing Industry, Rob Hulls and the President of Toyota Australia, Ken Asano (right) at the launch of the Toyota manufacturing cell in 2002. Mr Hulls also officially inducted PBR into the Victorian Manufacturing Hall of Fame earlier in the year.

A fierce commitment to quality improvement had resulted in PBR becoming the world's first brake manufacturer to achieve the international QS 9000 certification and this was followed by a series of further quality standard achievements including ISO 90001 and ISO 14001. PBR's achievements had won it many accolades such as Platinum and Silver awards in the Ford Motor Company's Excellence Awards, the GM Worldwide Supplier of the Year, the Victorian Manufacturing Hall of Fame, the TSA Silver Supplier Award from Toyota and the Australian Exporter of the Year Award.

It had been a remarkable journey over the 75 years. No doubt George and Jack would have been in awe of what they started.



