BACK FOCUS

Journal of the Australian Photographic Collectors Society inc
Incorporation Registration No. A16888V ABN 55 567 464974

Issue No 113 **June, 2019**

From your Ed: Another positive ID made!

John Wade, (PCCGB) above and below, explains why collecting Digital is no longer a dirty word!

John Fleming tells how he 'rescued' a Pentax KX.

THE AUSTRALIAN PHOTOGRAPHIC COLLECTORS SOCIETY Inc.

Incorporation Reg. No. A16888V ABN 55 567 464 974

OFFICE BEARERS OF THE SOCIETY

PRESIDENT: Rod Reynolds (03) 9853 7821 **VICE PRESIDENT:** Ken Anderson (03) 9457 1985
SECRETARY: Stephen Chung 0425 793 193 **TREASURER:** John Young (03) 9712 0413

COMMITTEE: Ian Carron (03) 9435 5659 Leigh Harris Kevin Saunders Andrew Korlaki
Matt Makinson

Market Organiser: Leigh Harris. **Web Master:** Rod Reynolds **LIBRARY:** Now held at AMRA Hall.

BACK FOCUS EDITOR- Ian Carron (03 9435 5659) Article Proof Reader: John Crossley
Editorial Matters & Back Focus Submissions to:-
Ian Carron. 10 Bicton Street. Greensborough. Victoria. 3088 Australia
Email: backfocus@apcsociety.com.au If in doubt, please request details for article format required for submissions.

Back Focus is set out by Ian Carron on an I5 Quad CPU 3.2Ghz IBM compatible computer using Microsoft Word 2013. Four issues p.a.

Society e-mail address: secretary@apcsociety.com.au Web Site: www.apcsociety.com.au Newsletter: andrew@korlaki.com
Address all Society correspondence to:- Stephen Chung. 11 Booran Avenue. Glen Waverley. Victoria. 3150 Australia.
Meetings are held at Australian Model Railway Association. 92 Wills Street. Glen Iris.
Hall Open Midday. Meeting commences approx. 1pm.
Membership Subscription, Local & Overseas $30.00 per annum

Send Subscriptions to: **Treasurer, APCS. P.O. Box 126. Kangaroo Ground. Vic. 3097.**

Notes from the desk of the Editor:

Sadly we have to report the passing of two long term members, Barry Skelton and Ron Spencer. A Vale page on these members and their backgrounds is in the issue.

Articles for our journal are now drying up! Very little stock is left in hand for future issues. If YOU have been thinking of writing one, now is the time to do it. Submissions are always appreciated and, at $30 per finished page, a nice way to earn some dosh for spending at one of our markets!

I would pass on my thanks to all who called or emailed expressing their approval for the last issue. Would be nice to have a better spread of writers though, rather than an issue made up from our regular authors and researchers.

With our AGM this month, we would hope to see some new, additional committee members. If you can help and contribute, you can volunteer for committee anytime. You do not need to wait till an AGM.

With regards to all for now, Ian Carron. (Ed.)

Index to this issue:

RESCUED PENTAX KX

John Fleming

‘Came across this years ago, pretty knocked about, might be good for parts.’ Dennis, a visiting sheet metal artisan of repute, delved into his toolbox and handed me a black blob of grime and dust that could be a camera. I made out ‘Asahi Pentax’ on the squashed down prism housing, so headed for the compressed air blowgun. After a couple of minutes of that and a soft brush, followed with a damp cloth wipe we had an almost complete black Pentax KX, Serial No. 8481147 with an SMC Pentax-M 50 mm f: 1.7 lens, Serial No. 2855422. A great camera in its day (circa 1975), and one of the all-time classics… Could I make it functional?

The entire rewind knob and shaft were missing, the film-advance lever barely moved and, when it did, horrific crunching sounds were emitted, and the hot-shoe had been struck such a heavy blow the side slots were closed. Worst of all, the prism housing was badly distorted downward. Maybe someone had used the KX as a jack stand? It was indeed beginning to look ‘parts only’, so I turned

Pic 1. The opening tool, fashioned from thin stiff wire.

Pic 2. Inserted and placed under the internal lip, pull upwards and the back opens!

my attention to the lens, which slipped off the bayonet easily. With the rear dusted and then the front and rear elements cleaned with lens tissue…absolutely 100% unmarked and crystal clear! No dings either, and the final checks were the diaphragm and focus spiral. Faultless click stop detents and smooth too, whilst the auto diaphragm worked perfectly. The focus was smooth enough, a little grittiness or dust perhaps. This I cleaned out by the old trick of a slip of bond paper slid between the outer and inner housings and gently withdrawing to pull most of the fine dust out. If nothing else then, here was an almost mint, fully usable SMC lens. A bonus was a spotless, genuine Asahi UV filter.

Back to the camera: it looked grim and I couldn’t even open it as the lifting knob/shaft assembly was part of the missing rewind. A flash of inspiration, a piece of stiff wire and some deft pliers work saw an opening ‘tool’ fashioned (**Pics 1 & 2**). CLICK! the back swung open and a surprise: bit dusty, but undamaged and unmarked *and* the visible shutter curtain looked good. It was now imperative to make that advance work so I could wind the shutter and see if my good fortune continued.

It transpired the advance lever was seized by a build up of grime, grease and dirt between the top housing and lever, and probably elsewhere I couldn’t see. Much work followed with strips of thin card, air blowing, etc. with a final flushing of the dirt using a light trickle of lighter fluid. With the camera held sideways and followed by a blast of air to blow the gunk away and also evaporate the fluid quickly.

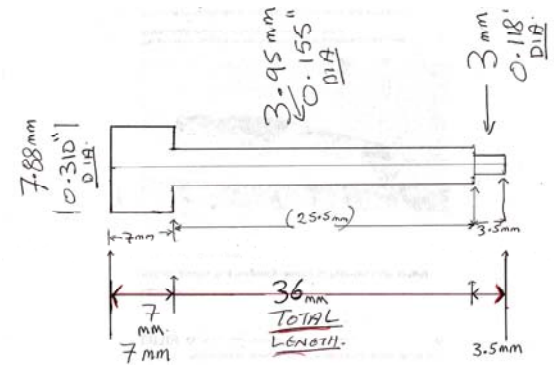
It worked, the lever wind wound, the button pressed and…was operational at every speed! The mirror flipped up and down too–really *has* to be saved now! Whilst examining the mirror (a little scratched,

but more than acceptable) I noticed the cloth hinge cover coming adrift. Carefully masking the area to avoid dribbles on the glass, contact glue was used to re-attach the cloth pivot covering (**Pic. 3**).

Pic 3. The mirror was carefully masked to avoid contact glue dribbles.

My next issue was to source a complete rewind shaft, knob and folding crank. A look on e-Bay didn't show any 'wreckers' or such, so I pondered what I might have in my odds and ends. I remembered a part-dismantled Olympus OM10 somewhere and went searching to find the right box and there was the OM's rewind shaft and knob…. How different was it though?

The Olympus shaft was useless to fit the Pentax, but that knob and folding crank seemed almost the same dimensions when compared to my chrome 'other' KX, so that was a good start. I decided to have a new spindle made by a machinist and measured up the existing genuine Pentax KX one on my other camera, doing a working drawing for the lathe operator. The material could be mild steel or brass…I opted for the latter as I had a scrap of rod that could be turned down. To further save cost, I decided to slot the spindle myself and work out how to attach the Olympus knob when the new shaft returned from the machinist (**Pic. 4**).



Pic 4. Drawing of the new rewind spindle that was fabricated.

The fabricated shaft was perfect, smooth as a piece of jewellery–the standard of work this particular lathe operator adheres to: a real craftsman. A small fine-toothed saw and a thin file soon had the slot made in the end that engages the film spool within the 35 mm cassette and I pondered how to attach the Olympus knob. The original Pentax one screwed on, the OM10 one was originally secured by a small screw into a small tapped hole. Only having 2 or 3 very fine taps, even those were a tad too big, so I decided to find a suitable thin, self-tapping metal screw that could cut its own thread and save me much grief. Voilà! A tin of tiny screws gave up just the right one, possibly from a dismantled audiocassette casing: the source of many a good chromed or black sub-miniature Philips head self tapper. Carefully drilling the tiny hole down a few mm into the fabricated brass shaft, I was most pleased as the small screw easily made its own thread as I coaxed it in with a jeweller's screwdriver. The final touch in making this new rewind assembly was turning two grooves in the shaft. I did this myself, using a vertical bench drill as a lathe and a small triangular file edge as the cutter at my carefully marked lines. Assembled, with the old OM10 knob and the crank sprayed satin black, it looks good and is fully functional (**Pics 5 & 6**).

Pic 5. The cleaned and operational KX with its new rewind.

Pic 6. Ex-Olympus OM10 knob and crank fits in well.

The final tidy up involved careful levering and manipulating to ease open the hot-shoe slots. With that done, and a normal flashgun able to slide on and off alright, I cut and filed to *exact* fit a piece of mild steel to slide in the hot shoe, then clamped that steel piece in the bench vice. I was thus able to gently pull the camera away from the bench, which eased the squashed prism housing back to almost normal. A slight crease remains, but it would be asking for trouble to continue. With some apprehension I tested the hot shoe contact…thankfully it still fires a flash, so I was lucky there too.

The final tally then is: all functional, smooth and sweet except the self-timer lever doesn't latch (but can be held down until the 10 second delay starts) and the mirror lock mechanism doesn't move. Almost forgot, the built-in meter is dead (either the Silicone cell or the actual meter coil) but that is of no concern as I use hand-held meters or the one in my head, the latter being pretty reliable after 60 odd years of use! The KX has cleaned and polished up well, and I'm very pleased to have saved it. Then, wouldn't you know, six months later I see an entire Pentax KX being sold as individual parts…including a rewind shaft (**Pic. 7**). To be honest, it was more satisfying and a challenge to *make* the thing!

Pic 7. Seen on the e-Bay camera 'wrecking yard'… a perfect KX spindle!

PAGET COLOUR

John Fleming

One of the earliest attempts to make colour photography possible was the Paget Prize Plate colour system patented in 1912 by G. S. Whitfield of Great Britain. The colours were created using a 'taking screen' sandwiched in front of the normal black and white emulsion, this screen having a cross hatched pattern of red, green and blue lines forming a matrix. The resultant processed image was viewed as a positive using a 'viewing screen' of similar colour lines.

Pic 1. Paget colour taking & viewing screens.

Pic 2. Palestine, 1918, Paget Colour Plate.

Frank Hurley was an early user of Paget, both in Antarctica and during World War 1.

Pic 3. Anzac Cove, 1916. Paget Colour Plate. Photo: Courtesy Australian War Memorial.

The system was discontinued in the early 1920s by superior technology such as the Lumiere Autochrome which had a finer colour screen incorporated in the emulsion. The Paget cross hatch pattern was fairly coarse and the colour viewing screens faded with age. It was, however, one of the only ways the history and events of that era remain for us to see today in some approximation of the original colours.

VALE, BARRY SKELTON.

John Fleming.

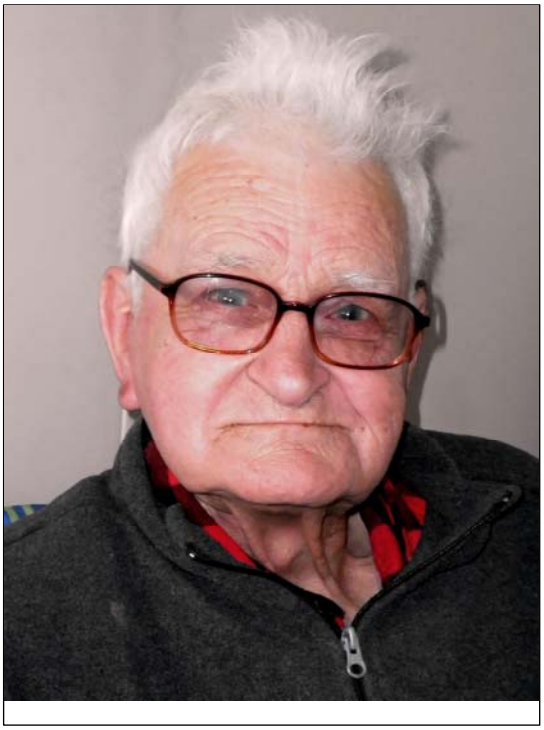
A longtime member of the APCS, Barry Skelton passed away on Tuesday 30th April 2019, aged 86. I first met Barry when I was just 16, in 1960. He did weekend weddings for our studio-one of several trusted and experienced operators. Barry had taken up photography when barely a teenager, his first camera a cheap Bakelite eye level affair, soon followed by a better 120 folder.

He studied at Swinburne College of Technology and began work with the State Electricity Commission (SEC) and was also a keen cyclist and ice skater. At St. Moritz ice rink Barry first met his future wife, Chris. Soon engaged, he worked evenings doing restaurant photos to supplement the income, then branched out to the weddings for various studios at the same time keeping his full-time day job. Later, he did some commercial work from home, setting up a darkroom in the garage.

The passion for photography stayed with him for the rest of his life and he used Linhof cameras (2x3 and 4x5) Retina, Olympus, Nikon and Hasselblad as well as a Mamiya RB 67-all the best gear and always kept in perfect condition. Barry and I shared many a beer and many a photographic adventure. He will be greatly missed.

VALE, RON SPENCER.

Ian Carron.



Sadly, we also lost Ron Spencer who, along with Barry, had been members for over 25-years. Due to our past trade affiliations, Ron and myself became quite good friends through our mutual membership. Ron was a real craftsman, even fabricating shutter blades for some of his repairs and restorations. I'll always remember the favour he did for me. An old cuckoo clock which has been in our family now for three generations had stopped working and Ron said he could do a complete service on it for me. This he did, with ongoing email photos of the work in progress, a complete strip and rebuild of both the clock and cuckoo mechanisms. Ron didn't even want payment for all this work, being done for friendship. However, I passed on a few hundred dollars which he was most appreciative of. This old clock, now some 120-years old, is still ticking and cuckooing well and keeps perfect time. A tribute to a very good friend, I think fondly of Ron during its twice daily winding. I'll certainly miss him, his friendship and those chats we had at our markets.

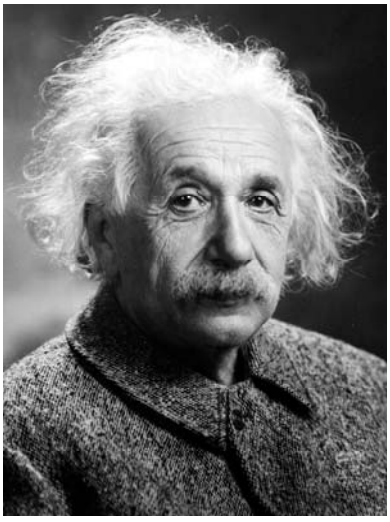
Digital is no longer a dirty word.

John Wade

When I began collecting in the early 1970s, cameras from pre-1939 were considered eminently collectable. Wind back the same number of years from today and you hit the point at which digital cameras began to appear. Which begs the question: are digital cameras collectable? Don't dismiss them until you learn something about their interesting evolution and the sometimes strange ideas that eventually led to the digital cameras of today.

Digital photography began, in a roundabout kind of way, with Albert Einstein. At the time of his researches during the early years of the 20th century, scientists had already discovered that when a metal like selenium was exposed to light, an electrical current was generated. The problem was, they didn't know why. Light, they reasoned, was in the form of waves and surely lacked enough power to energise electrons in the way needed to produce a current when it hit a metal surface.

Pictured in 2010: William Boyle (left) and George E Smith, inventors of the charge coupled device.



Albert Einstein: could he have been the father of modern-day digital cameras?

Einstein thought differently. Suppose light didn't come in waves, but instead behaved like particles that contained their own energy? If the frequency of these light particles was high enough, they could transfer their energy to electrons in the atoms of some metals, causing them to be ejected. In other words, light hitting the metal would result in the generation of a weak electric current.

Einstein put that theory forward in a 1905 paper and it was this, rather than his better-known Theory of Relativity, that contributed to him winning a Nobel Prize in Physics in 1921. The award was made 'for his services to Theoretical Physics, and especially for his discovery of the law of the photoelectric effect'.

The first CCD

Fast forward now to 1969 and meet physicists William Boyle and George E Smith working at Bell Labs in America, where they conceived what they termed a Charge Bubble Device. Leap-frogging the need to understand too much about semiconductor development, it is sufficient to understand that what they invented was a memory device that could be injected with electronic information.

From here it was only a short step to realise that the electronic information being injected into the device could come from the photoelectric information conceived by Einstein. In this way, they could capture not just the intensity of light striking a photosensitive surface, but also the pattern of the light. In other words, they could capture a crude form of an image focused on it. What they had created was a very early version of the charge coupled device, popularly known these days as a CCD, and something that is found at the heart of every digital camera. In 2009, Boyle and Smith shared another Nobel Prize for its invention.

In the years that followed, work on CCD technology continued to evolve. But, put in terms of conventional photography of the time, it was as if someone had invented film before inventing a camera to put it in. That was remedied in 1975, when two digital cameras arrived in the same year.

The Cyclops

The Cyclops first appeared in Popular Electronics in February 1975.

The first, and now largely forgotten, digital camera originated with three American electronics experts: eminent scientist and author Harry Garland, often recognised as one of the most important innovators in the world of personal computers, and two Stanford University student colleagues, Roger Melen and Terry Walker. Together they designed the world's first completely digital solid-state camera. They called it the Cyclops.

Garland was always keen to share his knowledge among electronics enthusiasts, which made him an ideal contributor to the American *Popular Electronics* magazine, whose readership mostly comprised electronics hobbyists. In 1974, he wrote to the magazine's Editorial Director Arthur P. Salsberg with details of his invention, received an enthusiastic reply and details of the Cyclops with a picture of it on the front cover appeared in the February 1975 edition.

The article took the form of a readers' construction project, showing how the camera could be built and linked to the Altair 8800, a very early microcomputer that had featured on the magazine's cover in January the same year. Alongside the magazine article, the Cyclops was also built and sold in 1976 by Cromemco, an electronics company founded in 1974 by Garland and Melen.

The Cyclops produced an extremely low-resolution picture 32 pixels square, the equivalent today of about 0.001 megapixels.

Kodak's electronic still camera

Kodak's digital camera that really began the digital age.

The Cyclops might justifiably be called the first digital camera, but it wasn't the one that started the revolution. The more important first was a camera designed by American scientist and electrical engineer Steven Sasson, who joined Eastman Kodak in 1973 at the age of 23. His place in digital history began inauspiciously when his supervisor gave him a broad assignment to produce an electronic camera that used a CCD rather than film.

Steven Sasson, inventor of the Kodak electronic still camera.

Sasson soon discovered that, although a CCD could accept a two-dimensional light pattern, it couldn't retain the information. This was a year before the first build-it-yourself, highly-priced Apple computer kit went on sale, so computers were not commonplace in the home or workplace. But the theory of how analogue could be converted to digital information was known, which enabled Sasson to find a way to digitise data from the CCD and then store it on magnetic tape.

Using six circuit boards, 16 nickel cadmium batteries, an analogue/digital converter salvaged from a digital voltmeter, the discarded lens from an old Super-8 movie camera and a portable digital

cassette instrumentation recorder, Sasson strung together and built the first digital camera, together with a device to play back the black and white image it captured on a standard television.

The camera weighed 8lbs. It took only 50 milliseconds to capture the image, but 23 seconds for it to be recorded and stored on magnetic tape. When the tape was placed in the playback device, it took another 30 seconds for it to appear on the television screen. The image was black and white and measured 100x100 pixels. In today's jargon we would call it a 0.01-megapixel camera. Those who saw it likened the camera's design to a toaster.

Executives at Kodak might have been impressed, but they were loath to show too much enthusiasm. The reasons for their lack of interest were threefold. First, the image quality was poor and no threat to the kind of pictures being produced even by 110 snapshot cameras of the time, let alone 35mm models. Second, in a world where colour prints were universal, they saw no way that people would want to look at black and white pictures on their televisions. The third reason for Kodak's immediate lack of interest came from the company's business and marketing people. Assuming advances in technology would eventually improve the image quality to a more satisfactory level, and assuming those images might soon be in colour, what they were looking at was something that threatened to replace film and processing. And what did Kodak make the lion's share of its profits from? Film and processing.

Nevertheless, Kodak did patent the camera, with a priority date of 20 May 1977 and also allowed Sasson to continue his researches. It was a wise move because most of the camera manufacturers that followed in the years ahead were forced to pay Kodak for the use of much of the early digital technology.

The Sony Mavica

By the end of the 1970s and into the start of the 1980s digital camera technology was beginning to develop at the kind of pace that made a consumer digital camera, capable of producing images to match those from conventional photography, look like an achievable proposition. The problem was that the company in the best position to produce such a camera was afraid to do so for fear of damaging its reputation and profits from film and processing. What was needed was for an electronics company, with no interest in film, to take over the reins.

Sony Mavica prototype with Mavipaks and accessory lenses.

In 1981, electronics giant Sony announced the dawn of what the company called Mavigraphy, a revolutionary video still picture system based around a camera called the Mavica – short for Magnetic Video Camera. In style, the Mavica was not unlike a 35mm SLR of the time, with interchangeable lenses in Sony's own unique mount. They comprised a 25mm f/2, 50mm f/4 and 16-65mm zoom.

The images were captured by a CCD and up to 50 colour pictures could be stored on interchangeable magnetic discs called a Mavipaks. These were like small versions of the floppy discs that would later become commonplace for use in home computers. Single shot or continuous shooting at up to ten frames per second was initially available, while publicity of the time claimed that 60 frames per second would be possible in future models. The Mavica's sensor delivered 200 ASA when shooting colour or 1,000 ASA for black and white. The resolution of the images was 570x490 pixels, equivalent to a little under 0.3 megapixels. The camera was powered by three AA batteries.

Pictures could also be stored on videotape using a video tape recorder of the time. But the Mavica also had another trick up its sleeve to appease those who were more used to film and colour prints. It came in the shape of a separate piece of Sony equipment called the Mavigraph, which enabled the

digital images to be output as hard copy colour prints. It did this by winding printing paper over a platen and pressing it against a thermal head. One of four coloured dye sheets – magenta, cyan, yellow and black – then slid over the head as digital signals were fed into it. As different amounts of heat were generated according to the intensity of the signal, each of the high-speed dyes was transferred to the paper, resulting in a full colour positive image.

It seemed, then, that the Sony Mavica might be the future of digital photography. But there were a couple of problems.

The first problem was that it used a technology which was actually leading digital photography in the wrong direction. The Mavica, like many of the cameras that followed from other manufacturers, wasn't actually a digital camera as we know it today. It was a still video camera that incorporated an image sensor and processing hardware similar to those used in the current analogue video cameras. These stored moving images on magnetic tape, similar to that used in a reel-to-reel audio tape recorder. In the Mavica, each image was stored in its own circle on the Mavipak's rotating magnetic disc. To play back and view the image, the disc was rotated at the same rate as when the image was shot and stored, and the appropriate frame was read repeatedly. The result was a signal that could then be viewed on a television or the camera's own viewer. The second problem was that the Mavica proved to be only a prototype that never went into production.

Canon iON

The Canon iON still video camera with the discs on which images were recorded.

In 1988, Canon launched a camera called the RC-250, which used similar still video technology to that previously seen in the Mavica. In America the camera was known as the Xap Shot, in Japan it was the Q Pic, but in Europe it was called the iON, an acronym, standing for Image Online Network. It was the first time a camera of its type had been available on the consumer market, and so is worth considering in some detail.

The iON was an unconventional shape and design with a flat body measuring 140x100x38mm, an f/2.8 lens at one end of the narrow side and a built-in flashgun at the other. Before using the camera, the battery had to be first charged. One hour gave around 80 per cent charge to the battery; full charge required more than three hours.

The small disc on which the pictures were to be recorded was inserted, by pressing a button beside the lens that caused the disc cover to spring up on top of the body. The disc was then inserted and the cover closed. A fully charged battery gave around 800 shots without flash, or 200-300 shots if flash was used for about one in four pictures. The camera could also be used by connecting it with a special lead, via the charger, directly to the mains.

The iON's control panel and LCD screen.

With everything now prepared for shooting, the camera was switched on by a sliding switch on top of the body with positions for 'lock', 'play' and 'record'. It was slid to the 'record' position. If flash was needed, a similar switch beside the first one, offered positions for 'off', 'auto' and 'on'. Next, the mode button was pressed to select a mode shown on a small LCD screen. The options were for 'single-shot', to take one picture at a time; 'continuous-shot', to take approximately three pictures per second while the shutter button was pressed; or 'self-timer', to give an approximate ten seconds delay.

The camera was not an SLR, so the viewfinder was beside the lens. Its rear eyepiece housed a dioptre adjustment ring to adjust for short- or long-sighted users. The lens was fixed focus from 3ft to infinity.

A yellow button which acted as the shutter release on top of the body had two settings. As it was pressed half way there was a quiet click sound that indicated that the motor to rotate the disc had started. If a red light blinked slowly, twice a second, in the viewfinder, it was an indication that there was not enough light and that use of the flashgun was recommended. Each disc had fifty recording tracks and each picture was stored on one of the tracks. In this way, the camera shot fifty pictures at a time on each disc.

Once taken, the pictures could be viewed immediately on a standard television. The camera was designed for horizontal use to take landscape shaped pictures. If the camera was turned vertically, then the resulting picture would appear sideways on the TV screen when played back.

More false starts

In and around the time of the Canon iON, several photo and electronic companies came on board with their own digital cameras, some of which reached the market for a short time, others of which never went on sale at all. Here are some of them.

1988: Fuji Fujipix DS-1P

Although shown at Photokina in 1988, the DS-1P never subsequently went on sale. It did, however, incorporate one innovation which would be important in the development of digital cameras – a removable memory card that Fuji had developed with Toshiba. The pixel count was a mere 400,000 (around 0.4 megapixels).

The Fotoman, a favourite with estate agents.

1990: Logitech Fotoman

Dubbed by the *New York Times "the Brownie of the personal computing set"*, the Fotoman quickly became popular with estate agents and insurance adjusters. But with the ability to only shoot in black white, a resolution of around 0.08 megapixels and a price of $600 it didn't last long.

1994: Apple QuickTake 100

Apple QuickTake 100.

By now, Apple computers which had come to the fore with the launch of the Mac Plus in 1986, were making inroads into offices and homes. The QuickTake was compatible with Apple Mac computers of the time. In style and the way it worked, the camera was similar to the Canon iON. Despite being badged by Apple, it was built by Kodak, as was the subsequent QuickTake 200. A third model, the QuickTake 300, was built by Fuji.

Front and back: the Casio QV-10, first with an LCD screen.

1995: Casio QV-10

Although capable of producing little more than 0.08 megapixels, this little snapshot-type camera was the first with an LCD screen on the back to both preview the picture being taken and to

review the picture after shooting. This was the first-time photographers could see what they had taken immediately after shooting. The screen measured 1.8 inches, the camera was also unusual in having a swivelling lens and it sold for $799.

The strangely shaped Nikon E2.

1996: Nikon E2/E2s

Produced in association with Fuji, the E2 was a strangely-shaped camera which used the subsystem of a Nikon F4 in a different style of body to that of its parent camera. It accepted both manual and autofocus lenses in the common Nikon F mount. One problem with digital cameras adapted from film models lay in the fact that the sensor was smaller than a 35mm film frame. As a result, the recorded image was cropped; a 50mm standard lens on the camera, therefore, acted like a medium telephoto. The 1.3-megapixel Nikon E2 solved this by introducing reduction optics technology in a novel design that involved a convoluted light path from lens to sensor. Light entering the lens was reflected off the reflex mirror and up to the pentaprism in the viewfinder in the usual way. But the reflex mirror was semi-silvered so that as well as reflecting light, it also allowed it to pass through, where it met a second mirror at the back of the body. From here, it was reflected down to a third mirror on one side of the base of the body, then sideways, through the reduction optics to meet the CCD on the opposite the side of the base of the body. That was why the E2 had such an unusual bulky design.

The unusual light path used by the Nikon E2 and E2s cameras.

The camera was capable of shooting one frame every one or two seconds to record its images on a special memory card which could be placed in a reader attached to a computer to view the images. The price was $10,000. The E2s which followed was based on the subsystem of a Nikon F100 and offered shooting at three frames per second for up to seven seconds, after which it needed another seven seconds to recover before shooting again.

1997: Sony Mavica MVC-FD5

The Mavica name, previously seen only on the prototype camera, resurfaced with the Mavica MVC-FD5. The 4.8mm f/2 lens was not a zoom and had no autofocus function, but it did have a macro setting for focusing down to 3 inches. It also featured a 2.5-inch LCD screen, which wasn't common on digital cameras of the time. The MVC-FD5 was followed by cameras like the 2001 MVC-FD75 with a 4.2mm-42mm 10x optical zoom and 2.5-inch LCD screen. Cameras in this series recorded images on 3.5-inch floppy discs which could be removed from the cameras and inserted into home computers to view the images.

The Sony Mavica MVC-FD75.

Kodak DCS cameras

By the time the Apple QuickTake arrived on the market, the boffins at Kodak had already come to terms with digital cameras looking a lot like the future of photography.

In 1990, four years before the QuickTake appeared, Kodak came out of hiding and took the plunge by announcing the first commercially available digital SLR. It was called the Kodak DCS (standing for Digital Camera System). The camera was actually a Nikon F3, with a Kodak digital image sensor mounted on the back. Two sensor backs were available for colour or monochrome images with a resolution of 1.3 megapixels. A large and heavy shoulder pack, linked by a cable to the camera, held the digital storage unit, comprising batteries and a 200 megabyte hard disc drive to record up to 600 JPG images. The camera was aimed at professional news photographers and cost $20,000.

The Kodak DCS 460.

Three split-body Coolpix cameras from Nikon, left to right: The Coolpix 900, 990 and 4500.

In 1992, the first camera became known as the DCS 100, as the DCS 200 was launched, this time based on a Nikon F801 body with a 1.5 megapixel sensor back attached. The major breakthrough with this camera was an extension to the base of the body which doubled its height, to contain the AA batteries needed to power the system and an integral 80-megabyte hard disc to record the images. It was cumbersome, but at least the storage unit was now integrated into the body with the camera.

In 1994, the DCS 400 Series was launched with digital backs and hard disc/battery bases attached to Nikon F90 and F90X bodies. Each of the DCS 400 series offered more resolution, which peaked with the DCS 460, launched in 1995 with 6.2 megapixels. It retailed for $35,600.

Kodak also went on to couple its digital backs and bases to Canon cameras like the EOS 1n film camera which, with a little adaptation and the attachment of a Kodak digital back, became the EOS-DCS3.

New designs for a new era

As the 20th Century drew to a close, digital cameras suddenly started to look like viable propositions for both amateur and professional photographers. The definitive digital SLR that would mark the true start of what was to come was just about to materialise, but at the same time new, more adventurous and sometimes weird non-reflex designs began to appear. Pixel counts and sensor sensitivity increased, prices fell, LCD screens became the norm on camera backs and rotating discs were replaced by solid-state memory cards to store images. These included smart media cards which comprised thin plastic sheets with embedded chips, before moving on to more robust compact flash cards and progressing to much smaller SD cards.

Recording media for early digital cameras: 3.5-inch floppy disc, Sony memory card stick, compact flash card and SD card.

In the last years of the 20th century and the first few years of the 21st, affordable digital cameras flooded onto the

market. Because they inherited sophisticated technology from their film camera ancestors, most digital models hit the ground running as far as exposure modes, zoom lenses and autofocus functions were concerned. Here are a few examples.

1998-2002: Nikon Coolpix split-body cameras

This range of cameras featured an unusual design with bodies made in two sections, in which the part holding the lens swivelled against the other. The remaining part of the body held the LCD screen and camera controls. The range started with the Coolpix 900 with 1.2 megapixels and 3x optical zoom lens, and progressed through the 900S, 950, 990 and 995 to the top of the range 4500. The last camera offered 4 megapixels, 16 scene exposure modes, video with audio and 4x optical zoom lens. They all used compact flash memory cards.

1999: Samsung Digimax 800K

As its name implies, the sensor sensitivity of this model was a mere 800K, or 0.8 megapixels. It had a fixed focus lens, no LCD screen and it used Smart Media cards to record up to 15 images. Nevertheless, back when it was launched, it still commanded a $200 price tag.

With no more than an 800k sensor, the Samsung Digimax 800K.

2000: Nikon Coolpix 880

For those who didn't want the split-body, swivel-lens style of Nikon, the company took the technology from the Coolpix 990, placed it in a small, redesigned rigid body and came up with the Coolpix 880. With 3.34 megapixels and a 2.5x optical zoom lens the camera recorded JPG or Tiff images on compact flash memory cards.

The small but well specified Nikon Coolpix 880.

2000: Sony Cyber Shot DSC-F505V

This strangely designed camera offered 3.3 megapixels. Its unusual design featured a small body containing the controls and LCD screen, with a huge Carl Zeiss 10x zoom lens mounted on the front, made to swivel up and down through 140 degrees. It recorded images on a Sony memory stick.

Sony Cyber-Shot DSC-F505V with its unusual swivelling lens.

2000: Pentax EI-2000

This stylish camera was designed by Pentax in association with Hewlett-Packard. The reflex viewfinder looked directly through the 3x optical zoom lens courtesy of a beam-splitter. The 2-inch LCD screen could be tilted through 90 degrees, while digital images were recorded in colour, monochrome or sepia.

2002: Sony MVC-CD400

The unusual aspect of this 4-megapixel camera was the way images were recorded on an 8cm mini-CD that slotted into the back of the camera. Before use, the CD needed to be formatted and, once the pictures had been taken, it needed to be 'finalized' before its images could be viewed on a computer screen. Both functions were easily carried out in the camera.
The MVC-CD400 also featured a Carl Zeiss 3x optical zoom lens and multi-pattern metering.

Front and back: the Sony MVC-CD400, which recorded images on mini-CDs.

2004: Spyc@m 100

Shaped like a large, chunky pen, this even had clips on two sides so that it could be secured into the top pocket of a jacket. There was no LCD screen to preview pictures, but there was a small one below the viewfinder which displayed the number of pictures taken and their resolution. In high definition mode, the camera shot 100 pictures; at low-resolution it shot 150. It could also shoot up to ten seconds of video, and could be used as a computer webcam.

The unusually styled Spyc@m 100.

2005: Casio Exilim EX-Z50

As digital camera technology progressed, a new craze for credit card size cameras developed. Pentax, Canon and Olympus were among the photo company pioneers, but among the electronic company digital manufacturers, the Casio cameras had just that little bit more style. The EX-Z50 measured just 8.5x5.5x2cm, yet into those trim dimensions it packed a sensitivity of 5 megapixels, a 2.5-inch LCD screen and a 3x optical Pentax zoom lens. It recorded its images on SD cards. The camera came with a cradle onto which it was mounted for charging the battery and easy viewing of images on the LCD screen.

Casio Exilim EX-Z50, one of many credit card size cameras from this era.

The first mirrorless cameras

None of the aforementioned models was an SLR, a style of camera that manufacturers were still struggling to produce at an affordable price. Some, however, came up with the next best thing by producing a series of cameras that looked and handled like an SLR, but which used a different method of viewfinding.

This new breed of camera placed a tiny LCD screen, similar to the one on the camera back only much smaller, actually in the viewfinder so that it could be viewed with the camera to the eye. Like a true SLR, the viewfinder saw exactly what the lens was seeing, the difference being it did so electronically rather than optically.

Here are three cameras from three makers who led the field with this new technology.

Sony Mavica MVC-FD97 used 3.5-inch floppy discs and Sony memory sticks to record images.

2001: Sony Mavica MVC-FD97

Continuing the Mavica name into the 21st century with this somewhat large, 2.1-megapixel camera, Sony also continued the previous Mavica system of recording images on 3.5-inch floppy discs for insertion into a computer disc drive to view the images. However, to give photographers the opportunity to store more images than the floppy allowed, the camera offered the alternative of a removable Sony memory stick that gave 64 megabytes of storage against the floppy's 1.44 megabytes. The camera incorporated a fixed 10x optical and 2x digital zoom lens, a 2.5-inch LCD screen and recorded both JPG and TIFF files.

Minolta Dimage 7, an early mirrorless camera.

2001: Minolta Dimage 7

Compared to the Mavica, the Dimage was smaller, neater and better specified. The smaller body size meant the LCD screen on the back of the body measured only 1.8 inches, but it had the advantage of conserving power by switching off automatically as the camera was held to the eye, when the smaller viewfinder screen switched itself on. This was a 5.2-megapixel camera with a manually operated 7x optical zoom lens with a macro setting.

2002: Fujifilm Finepix S602Z

This camera took advantage of what Fuji called the SuperCCD, announced two years previously. Unlike the square pixels used in a conventional CCD, the SuperCCD used eight-sided, honeycomb-shaped pixels which allowed a higher horizontal and vertical resolution to be achieved compared to a traditional sensor with an equivalent pixel count. In this way the 3.1-megapixel SuperCCD in the camera produced a 6-megapixel image. The camera featured a 1.8-inch LCD screen, 6x optical zoom lens and recorded its images on compact flash cards.

Fuji FinePix S602Z with a new approach to pixel design.

Meanwhile, as other manufacturers were busy concentrating on new and sometimes weird designs, Nikon had already developed and built a revolutionary new type of camera. Unlike other digital SLRs, which were little more than converted film cameras made by one manufacturer and adapted by another, this one was built from scratch by a single manufacturer. Even more importantly, Nikon brought the price in at just under $3,000. It was launched in 1999 and became the template for a whole new breed of digital camera. Appropriately it was called the D1.

The Nikon D1 fitted with a standard 50mm Nikkor-S lens from a Nikon F.

Nikon D1

Compared to most of its contemporaries, the Nikon D1 was a huge beast of a camera, measuring 16x15x14cm with its supplied zoom lens on board, and weighing in at 1.7kg. Although it had been designed from the start purely as a digital camera, it still strongly resembled the Nikon F5. The D1's image sensor boasted 2.7 megapixels, which was pretty much what might be expected for its year. Continuous shooting could be carried out at 4.5 frames per second and, again for its time, the autofocus function was fast. It accepted the full range of Nikon manual and autofocus lenses. The battery was huge and took up most of the base of the body. The top plate incorporated an LCD screen on which the usual exposure modes etc were displayed, while a much smaller, oblong shaped, LCD screen on the base displayed details of image quality and white balance. The images were stored on a compact flash card. The LCD colour screen on the back of the body, at only 2 inches, was a little smaller than might have been expected. In 2001, The Nikon D1 was replaced by the D1X and D1H, the former offering a 5.3 effective megapixel sensor and three frames per second continuous shooting; the D1H, retaining the 2.7-megapixel sensor but upping the continuous shooting capabilities to five frames per second. All three cameras were aimed squarely at the professional market, both in terms of specifications and prices. It wasn't until the 6.24-megapixel Nikon D70 arrived in 2004 with a price tag under $1,000 that Nikon digital SLRs became viable for general consumers. Just as that first Kodak electronic camera in 1975 had marked the beginning of the end for film cameras, so the Nikon D1 range signalled the end of the beginning for digital SLR design.

The Nikon D70, first Nikon DSLR aimed directly at the consumer market.

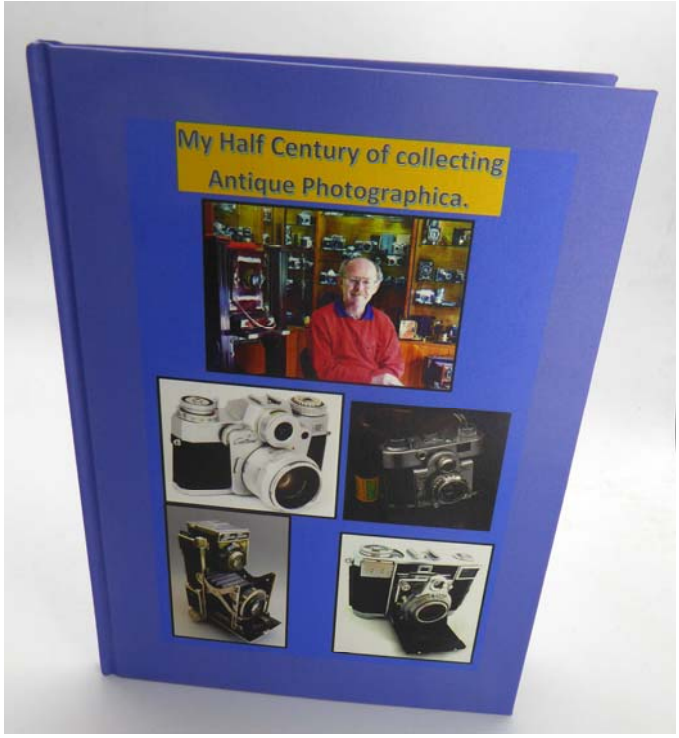
This article is reproduced from Photographica World, journal of the PCCGB with kind permission from the author, John Wade and the editor, James Downs.

Picture credits:
• Albert Einstein: By Orren Jack Turner, Princeton, N.J. Modified by PM Poon and later by Dantadd. [Public domain], via Wikimedia Commons.
• Willam Boyle and George E Smith: © Prolineserver 2010 via Wikimedia Commons.
• Cyclops: By Cromemco, via Wikimedia Commons
• Steven Sasson: By Aljawad via Wikimedia Commons.
• First Kodak digital camera: Courtesy of the George Eastman Museum, with permission from The Eastman Kodak Company.
• Sony Mavica prototype: Courtesy of Sony UK.
• Logitech Fotoman: © Rama, via Wikimedia Commons.
• QuickTake 100: By Jaqian via Wikimedia Commons.
• Nikon E2: © Aston's Auctioneers.
• Kodak DCS 460: By Gisle Hannemyr via Wikimedia Commons.
All other pictures: © John Wade.

Why Not Write a Book?

Ian Carron.

And that's what I did late last year, my autobiography. Good way to pass the time while incarcerated in a ward at Austin Hospital for nigh on three months.



The cover.

Showing square spine, 'Perfect Bound'.

Our Back Focus printer, Jim, recommended a firm, The Bindery, in suburban Melbourne. A good choice as it turned out. Jimmy Tang at The Bindery was a wealth of help and assistance. The finished product, having chosen hard cover and Perfect Binding with a flat spine, was more than I hoped for. So good in fact that I decided to immerse myself in another, based on my fifty plus years of collecting. Once again, I was more than pleased with the finished product.

I covered the memorable pieces which have passed through my hands over this period, including some we'd rather forget but which we learn by.

Rear cover.

Interior, top quality colour printing on superior paper.

This book runs to forty-five pages and I included an index at the end. A worthwhile project as an adjunct to our collecting. To anyone interested or contemplating following a similar path, I can give you details on contacting The Bindery.

It is all about Polyoxybenzylmethylenglycolanhydride

or $(C_6H_6O\text{-}CH_2O)_n$ **Our late Roger Burrows.**

Actually we will make it easy for the non-chemists in the society and just call it Baekerlite. Oh well, if you insist, Bakelite. Bakelite is a thermo-setting phenol-formaldehyde resin developed by the Belgian-American Leo Baekland in New York c.1907. It was one of the first plastics and was prized for its non-conductivity and widely used in electrical insulators, radio and telephone cases, light switches, power points and plugs. It was actually a clear product but wood and asbestos fibres were used to strengthen it and this gave the brownish colour we associate with the product. When it was clear it was even made into jewellery and, with a yellow dye, into synthetic amber. It was nominated as a National Chemical Landmark on 9 November 1993 for its significance as the world's first synthetic plastic.

Pic. 1. Hawkette.

Once Baekland's patents had run out in 1927 there were many different manufacturers ready to use this new product and improve on it, if possible, and among them makers of cameras. When you consider that the body and bed of a folding camera or the body and film carrier assembly could be moulded to a finished state with minimal screws for hinges and shutter mounts it must have made a significant saving on the cost structure. No pressing, trimming, covering or painting required and you could have all sorts of fancy patterns or embellishments and also a variety of colours.

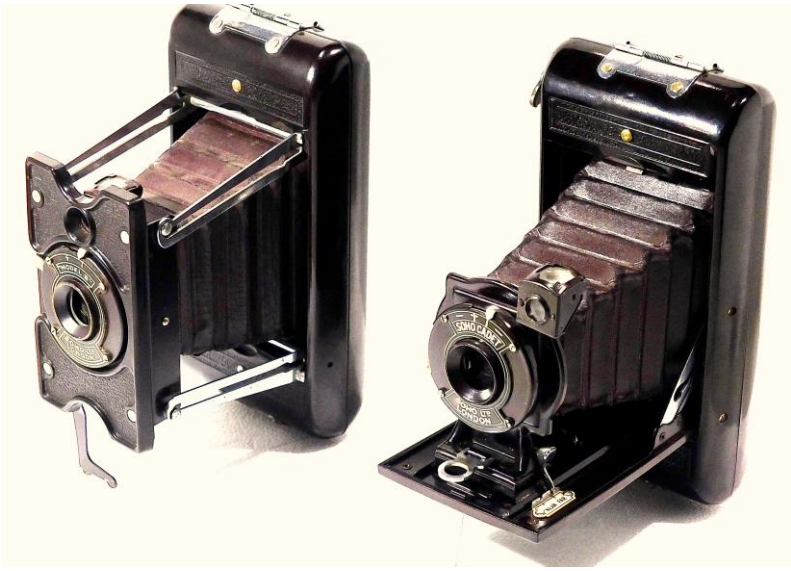
The first camera to be made of Bakelite is generally considered to be the Rajar No. 6, c. 1929. It was made by A.P.M. Ltd. of London and the next seems to be the Kodak Hawkette No. 2, in 1930. This was described as a premium camera; that means you saved up tokens from Cadbury's chocolate and when you had the required amount sent them off and claimed your camera. In Australia it was cigarettes and you sent off you tokens to W.D. and H.O. Wills to claim your camera.

(Pic. 1.) Pics 2 and **2a** show typical tokens.

Pics 2 and 2a. Token actual size 2 × 2½ inches (51 × 64 mm).

The next manufacturer was Soho Ltd., also of London, and they produced the Cadet and the Model B in 1930 (**Pic. 3.**) They also produced the Pilot in 1933 and that was the end of their run with Bakelite cameras.

Even Zeiss got onto the bandwagon producing a couple of cameras in 1933 and 1934. (**Pic. 4**) The manufacturer who stayed with the material the longest would have to be Kodak. Let's start with the Baby Brownie: a beautiful Teague Art Deco design that arrived in 1934, the Baby Brownie Special in 1939 and the Six-20 Bull's-Eye in 1938. **(Pic. 5.)**



Pic 3. Soho Cadet and Model B.

Pic. 4. Zeiss Simplex.

Pic. 5. Baby Brownie, Special Brownie and Bull's-Eye.

Now if we look at Lyle Curr's beloved Kodak 35 the centre part of the body was moulded Bakelite and that continued through till 1948. (**Pic. 6.**) The Brownie Bull's-Eye is also listed as being made of Bakelite, as also is the Photax (**Pic. 7**) from France. The Brownie 127 is, but the Cresta is not. It appears that 1960 would see the last of the Bakelite cameras so what is the fascination? The great flaw with Bakelite was that it was brittle. So, to get strength, it required thicker walls in the moulded product and therefore more weight and material were needed. Hence the newer plastics took over and Bakelite was relegated after a reign of 30 years. The other flaw was that it becomes more brittle with age, which is why it has become very hard to find perfect models from the 1930s. There is usually a small chip or piece missing off a corner but that's what makes collecting fun: finding that special item.

Pic. 6. Kodak 35.

Pic. 7. Photax.

EEZ A PUZZLEMENT!

Herb Parker.

In the movie ‘The King and I’ Yul Brynner says at one point: “eez a puzzlement”, and the item I am writing about here reminds me of that statement.

Fig. 1.

Some 15 years ago, when I was living in Redcliffe north of Brisbane, a member of the Bowling Club heard that I was a photographic collector and gave me a Coronet Stereo camera and viewer plus a rather large wood and brass item. It was marked ‘Thornton Pickard’ with a patent number on it. I had never seen anything like it before and did not know what it was, but it looked to me like an old projector or ‘Magic Lantern’. So, I took it along to the next Cameraholics meeting to see what I could find out. Luckily Sandy Barrie was there. Sandy, who will be known to a lot of readers, has an almost encyclopaedic knowledge of photographic history, especially early history.

Fig. 2.

Sandy pointed out that the lens had an iris diaphragm and a red filter, and therefore it was not a projector but an enlarger. He thought it dated from around 1930, and that it might be worth around $150 or so. Hmmm! Anyway, it was an interesting display piece, and it went on top of one of my display cabinets (Fig 1), where it sat for a number of years. Then recently I was asked to bring along something old and interesting to a small camera group meeting. I took the Thornton Pickard enlarger, which aroused a lot of interest, and that re-awakened my own interest in the item.

Fig. 3.

Starting from the front there is of course the lens with iris diaphragm (no markings on the lens other than marked F stops) and red filter (Fig 2). Apart from ‘'THORNTON PICKARD ALTRINCHAM CHESHIRE’ there is also the word IMPERIAL and a patent number 335057. Then come bellows, which allow the lens to be focused via a screw right at the front of the wooden base plate at the bottom of Fig 2.

Next is a wooden holder for quarter plates. There is a 35 mm slide sandwiched between two plain glass plates (Fig 3), so whoever used it last was enlarging a 35 mm B&W slide. As far as I know the only ever commercially available B&W reversal film was from Gevaert, and it went off the market in the 1960s, so it's likely that nobody has used this enlarger for at least 50 years, and even then, it must have been used as a slide projector. After that comes a wooden housing with a pair of condenser lenses (Fig 4). Behind that is another set of bellows (presumably to prevent stray light leakage) and then a black metal box with an electrical power point and switch (Fig 5), which is obviously the lamp housing. It must have either been specially made for Australia or added in Australia later, because that type of power point is not used in the UK.

Fig. 4.

Fig. 5.

On the other side of the box there is a round window, some 20 mm in diameter with red glass in

it, apparently so that the operator can see whether the lamp is on. I cannot see a way of getting into that metal box but it must contain a lamp holder. There is a round hump at the far end (Fig 5) held on by six screws.

I think that must be the lamp holder and, to change lamps one has to remove the six screws. I tried to do so, but they are very tight and removing them might damage them, so I left them alone. Given there are no cooling slits (evidently to prevent stray light escaping) it must have got very hot when in use, but it was probably only used in short bursts. I have not tried to turn it on as I am wary of old electrics, but I scanned the negative from Fig 3, hoping it might give me some clues. It is a scene of the Brisbane City Hall, apparently quite old (Fig 6), which unfortunately does not tell me much.

Fig. 6.

I started to do some research, but found it surprisingly difficult. There doesn't seem to be a lot of them about, which is probably not surprising as most photographers before the advent of 35 mm used mainly contact prints, with enlarging being for professionals and a few serious amateurs. The basic design goes back to the late 19th century, and they were originally made for gas lighting. One which looked similar to mine was on offer on eBay for £130. Another one was sold in a Köln auction for some €270 which looked very similar to mine, except there were holes along the bottom of the metal box, presumably so air could get to the gas burner and combustion gases could get away, and the lens was quite different. It was said to be from around 1900. The National Media Museum in Bradford UK has one but without a lens. Another website said the 'Imperial horizontal enlarger' had been in production from 1880 to 1930, and that they were originally made for use with gas lighting. Those dates can't be right because Thornton Pickard were not established until 1888. Another similar enlarger was for sale and said to be from 1945. That can't be right either because Thornton Pickard ceased production in 1939. Another similar but much larger example was for sale at some USD 3400 but that seems to be a special item probably made to order. I thought it had to be older than 1930. The identification plate on the front looked older, and the fact that electrics were apparently added later suggested that it was made for gas lighting, which had largely gone out by World War 1. Also, Thornton Pickard declined after World War I, so I thought around 1910 seemed more likely.

But then I searched around on Google some more and found 'The Thornton Pickard Story' by one Douglas Rendell, a wonderfully informative and well researched document, a little difficult to read as the print is quite small but I went through it anyway. There was a huge amount of history and details of many cameras, but I could find no mention of enlargers anywhere. And then, right near the end, I got lucky. There was a list of all the patents Thornton Pickard held, and there in 1929 was Patent No. 335057 'enlarging - movable lens carrier'. So, my enlarger must have been made after 1929, and Sandy was right after all! But I was surprised that what seems to be a relatively uncommon item, if not a rare one, seems to arouse so little interest. And that's what is so odd about collecting. For example, I have a very nice Leica IIIg with lens, for which I paid over $1000 (because that's what it's worth on the collectors market), but if anyone really wants a Leica IIIg it's not that hard to find one - at a price! I also have a Kobana SLR with original lens, listed as 'seriously rare', and I would be lucky to get $50 for it.

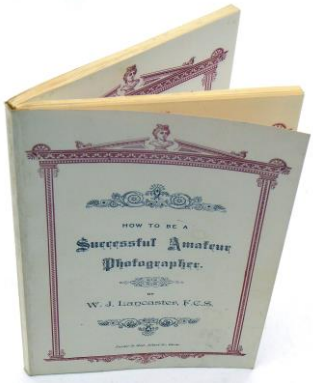
So, at the end of the day what have I got? A rather large and relatively uncommon item, made around 1930 or so, although the basic design is a lot older. But I have never seen another one, it looks good on display, and many people show an interest in it.

Another Identified at Last!

Ian Carron.

The article from Geoff Harrisson in our last issue reminded me of a camera of my own which took ages to positively identify. No badges or names adorned it. Years later, I sent photos to a collector in the UK and he identified it as a Lancaster 'Le Merveilleux'. A double confirmation was when I came by the book below and the page from it.

This is a fine example of early British craftsmanship and is a quarter plate camera, (3¼ x 4 ¼ inch). It came with the two plate holders shown.



6

The first Camera we will examine is

The 1888 Patent "LE MERVEILLEUX."

WILL TAKE VERTICAL AND HORIZONTAL PHOTOS.

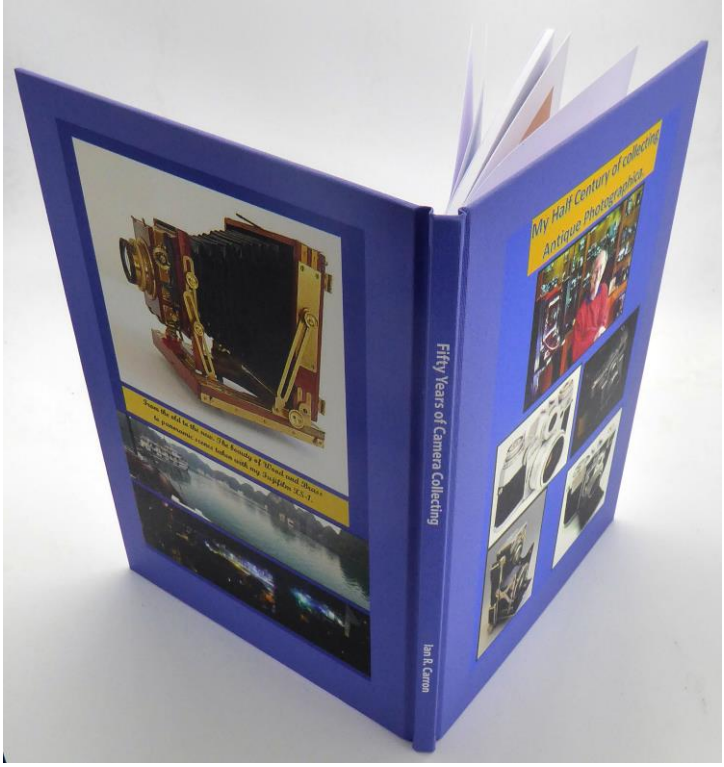
THIS is a capital Camera for an Amateur who has no desire to spend much money, and wishes to do good work. The Camera is made of mahogany, well framed together, the front part being joined to back by a bellows body which makes the Camera very portable. The Focussing Slide is hinged and folds over on to the top of Camera when dark slide is in the Camera. The slide reverses in an instant, so that a vertical or horizontal photo can be taken without moving any part of the Camera. The Lens is a meniscus achromatic one, giving excellent depth, and covering the plate all over from corner to corner. With this apparatus there is a portable Camera Stand and Brass Top, and when the price is considered, it is, without exaggeration, the most marvellous Camera ever made.

PRICES OF CAMERA, SLIDE, LENS AND STAND.

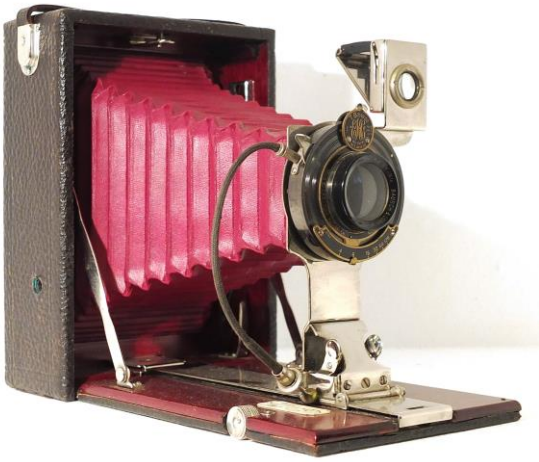
¼ plate, 21/-; ½, 42/-; ¾, 63/-; 10 × 8, 84/-; 12 × 10, 105/-

Finally, after many years I was able to list it by name in my database rather than 'Unknown Maker.'

The price of twenty-one shillings (£1.1.00) would have been a princely sum back in 1910.



Your Ed asks, 'why not write your own book?



The Murtoa Premo…. From our late Roger Burrows.

Herb Parker solves a 'puzzlement'.

Bakelite Cameras, also from Roger Burrows.