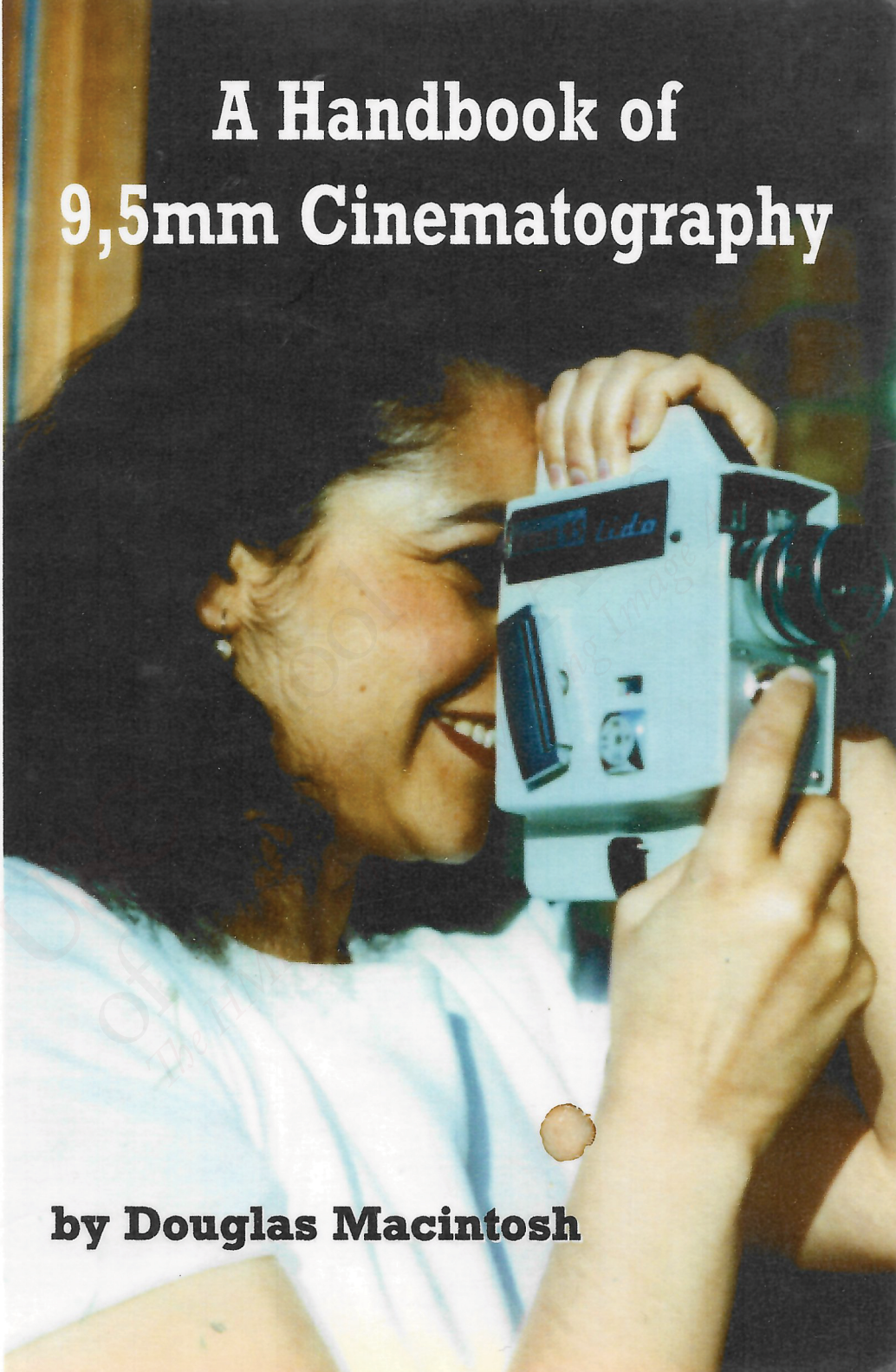
A Handbook of 9,5mm Cinematography



by Douglas Macintosh

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Douglas Macintosh

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DEDICATION

This book is dedicated to the memory of KEN WORDSWORTH (1927 - 1998), an ardent enthusiast for 9,5mm film-making throughout his life and an instant friend to any like-minded soul. He maintained active contact with 9,5mm cinematographers around the globe and enjoyed the distinction of being the only member of the Group 9,5 club to be expelled.

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NOTE

Some parts of this text have previously appeared in ***International Movie Making*** magazine, and the author expresses his gratitude to its Editor, Roy Salmons, for his co-operation in the production of this volume.

PREFACE

It may seem to be and indeed it may actually be the height of idiosyncrasy to produce a handbook for 9,5mm cinematography in the year 2000. After all, cinematography itself is surely dead except in some professional film studios and even there its days are numbered. The great consumer public, which never adopted cinematography in vast numbers anyway, during the 1980s took up the camcorder for "home movies", for which it is quite well suited though making little economic sense. That videotapes are unlikely to maintain replay ability much beyond twelve years clearly does not worry people. Even after many years of commercial development and huge investment by the electronics giants of the Far East, satisfactory large screen projection from these tapes remains an extremely expensive proposition and original tapes cannot be edited. Most purchasers of camcorders soon find that the apparent advantages of cheap tape and instant replay of colour images with synchronised sound on a television set (with no delay for processing) are illusory temptations. Very often the camcorder, with its voracious appetite for expensive rechargeable batteries, is put away by its owner and quietly forgotten as one of those expensive mistakes attributable to modern marketing.

Cinematography is generally misunderstood as being a process whereby moving images are recorded on film and projected on a big screen. In practice, however, after Edison's brief films which did not amuse the public for long and were not projected, the process has always involved an intermediate stage of editing. Films are rarely screened with shots in the same order that they were exposed. This stage is supremely easy with cinematographic film, the equipment required being rudimentary and inexpensive and the process itself is dynamic and satisfying with endless artistic possibilities. With videotape, contrariwise, the equipment for editing is expensive and involves re-recording from the original usually with quality degeneration; consequently it is not commonly undertaken, which contributes to the ennui.

So, as of this writing, while silver-based ciné film remains available the art of cinematography is still open to adoption by all those desiring to practise it and at very low cost. It is unimportant that inexpensive amateur ciné equipment is no longer manufactured, since there is a large amount of disused equipment available. Furthermore even though some of this equipment may be seventy years old, it was built to last forever and is likely to remain perfectly functional today. Indeed it may work better than originally, as film emulsions have been vastly improved over the years and the lenses fitted to ciné equipment are generally of such quality as to reveal that improvement.

Cinematography for the masses only became an economic possibility with the introduction of narrow-gauge films, using reversal processing and a non-flammable safety film base. This development occurred virtually

Pathé-Baby

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simultaneously on both sides of the Atlantic, although Pathé Cinéma directed by Charles Pathé are recognised as having released narrow-gauge ciné film first, just in time for the Paris Christmas trade in December 1922. This took the form of printed films of 30 or 60ft. in length contained in canisters which were mounted on top of the Pathé Baby projector. The gauge or width of these films was 9,5mm. Pathé engineers had developed a printing machine accommodating 35mm film with non-standard narrow perforations and allowing three images to be printed side by side by reduction from a standard 35mm negative. The three strips were then slit to 9,5mm width, being provided with perforations 2,4mm wide and 1mm tall on the frame line between each picture with a view to projection by an intermittent mechanism of the claw pattern. The Baby projector had a clever mechanism incorporated which arrested the intermittent for several turns of its hand cranked drive when a notch cut in the side of the film tripped a catch in the projector gate. This was used for titles, maps and so on to be projected as stills, thereby prolonging the playing time of films which would otherwise have only lasted a minute or two. For the operator the system was simplicity itself. The specially pre-curled film leader was pulled from the cassette clipped to its housing atop the projector and trapped in the film gate so as to engage the claw mechanism. It was only then necessary to focus the image on the screen and wind the driving handle to have a film show. The film was automatically taken up in a chamber below the gate. After 'The End' the film was cut away in the perforation area so could not be pulled from its cassette. A geared rewind handle was used to wind the film back again.

In commercial terms the Pathé Baby was undoubtedly conceived as a means of exploiting the potential in the home entertainment field ("le cinéma chez soi") of their vast stocks of 35mm negatives. In this it was a resounding success and even today the chief interest of most enthusiasts for the 9,5mm gauge rests with the amazing legacy of printed films, all in black-and-white and treasured as extraordinary relics of the days of silent cinema rather than as entertainment.

The beautiful and ergonomic Pathé Baby ciné-camera engineered by Continsouza of Paris appeared almost as an afterthought some twelve months after the projector and after Eastman had launched the 16mm gauge in America with a complete camera and projector outfit. But Pathé had little need at that time to worry about competition from Kodak. The Baby system retailed in Britain for £10, whereas the Kodak kit was launched at $350 (£88.50 in those days). And Kodak had not produced a library of films. It is a most curious paradox that in this situation Eastman, whose commercial interest lay in promoting raw stock consumption, should have produced a clumsy spool-loading camera that was practically unusable with its nasty waist-level reflex (not through the lens) viewfinder and spool loading yet complemented by a projector that was virtually a scaled-down professional model, whereas Pathé had produced a projector with extremely limited potential but accompanied by a camera less than a tenth the size of the Ciné-Kodak which performed just as well. Furthermore Pathé understood from the outset the need to simplify film handling for amateurs and immediately launched camera film in



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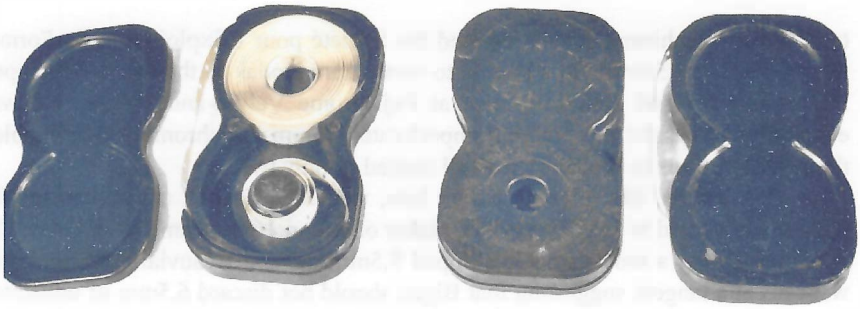
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L'étui de 3 films vierges positifs directs contenant chacun 1200 cinégraphies. .. .. 27 frs.





daylight loading chargers requiring no threading procedure; this penny did not drop at Rochester for more than a decade. The Baby charger took up to 30ft of film and for some years was returned from processing in the same cassette as the printed films one could buy or rent. Naturally these camera films were considerably cheaper than a 100ft spool of 16mm film. In fact the 9,5mm film could be bought in Britain for as little as 5p with processing at 8p. This really was a medium for the masses and it is hardly surprising that in France and Britain it remained the most popular gauge for cinematography for about three decades.

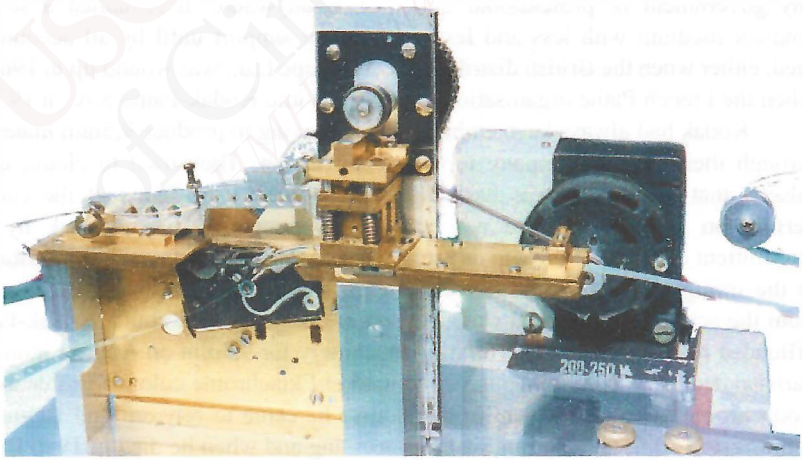
There are many reasons for the eventual commercial triumph of the 'yellow giant' including the colossal size of their home market, their introduction of the cheaper double-8mm system in 1932 and the unsurpassed Kodachrome colour film in 1935 (9,5mm users had the inferior Dufaycolor), World War II in which all combatants employed 16mm film whilst Pathé were occupied, the happy accident that 16mm could do without one set of its twin perforations to accommodate a soundtrack and its adoption by worldwide television until videotape could be developed and so on. During these years 9,5mm film, though offering almost the same picture area as 16mm on a much more compact carrier, was not adopted by any government or professional organisation anywhere. It remained a strictly amateur medium with less and less commercial support until by all accounts it died, either when the British distributor, Pathescope Ltd., was wound up in 1960 or when the French Pathé organisation was merged into Kodak-Pathé S.A. in 1970.

Kodak had always been embarrassed by having to produce 9,5mm materials through their French company for the local market. They tried to claim, quite falsely, that the format was basically flawed, due to the fact that the central perforation of 9,5mm could not be properly supported when struck by the intermittent claw in the camera or projector gate. In fact, given correct adjustment of the spring pressure on the runners at each side of the gate, no damage results from the action of the central claw. As soon as they decently could, Kodak-Pathé offloaded their slitting and perforating machinery for 9,5mm on André Ligonie, a Parisian dealer, who was encouraged to market Ektachrome colour films enabling Kodachrome to be withdrawn. In due course he came to rely on Paul Bigou, an enthusiast in Albi, to carry out his E6 processing and when he died in 1986 Bigou

took on the machinery, having created the Société pour l'Exploitation du Format 9,5mm (S.E.F. 9,5mm). He was able to move from Kodak to the newly developed Fuji colour reversal materials, such as Fujichrome Velvia and Provia, and was eventually successful in obtaining unperforated 35mm Fujichrome which enabled three 9,5mm films to be slit from a roll instead of only two.

Paul Bigou, like Ligonie before him, wanted to launch a new camera for 9,5mm and turned to J.-P. Beauviala, maker of Aäton 16mm cameras in Grenoble. After producing a mock-up self-blimped 9,5mm camera Beauviala unfortunately went off at a tangent suggesting that Bigou should not discard 6,5mm of unwanted Fujichrome but should split the roll in three creating a new gauge 11,6mm wide (to be called "Super-9,5mm", would you believe?) at which point the whole project soon foundered. Regrettably Paul Bigou's methods of raising capital for S.E.F. 9,5mm turned out to be illegal and he was imprisoned on fraud charges. His Company, which belonged to a bunch of local farmers at that point, was liquidated and its assets in the form of the all-important machines were acquired by Laboratoires Ciné Dia, a sizeable commercial laboratory and post-production house run by Daniel Colland at Epinay-sur-Seine on the outskirts of Paris. This is the source of most 9,5mm colour camera film today.

However the process of slitting wide rolls of film material and providing it with 9,5mm perforations is a relatively straightforward mechanical proposition, which has been and still is being undertaken by various enthusiasts. After the second World War a great deal of ex-Government 16mm monochrome film was slit down and reperforated commercially, as Pathescope Ltd. was incapable of meeting post-war demand. The machinery most recently developed for this was described by John Cunningham of Newport, Salop, and illustrated in *International Movie Making* magazine in July 1999.



So, contrary to frequent report, 9,5mm cinematography is far from dead. It is supported in France by Ciné Club 9,5mm de France and in Britain by Group 9,5 each of which has around 500 members, though historically they have lamentably failed to combine for maximum influence. There is an International 9,5mm Festival, held in Edinburgh in 1999, whose location moves each year to a suitable European centre, most often in France or Britain. And Calella in Spain hosts a 9,5mm Festival every year. Those wishing to exhibit their efforts have many opportunities to do so.

Given that it exists, why should anyone turn to it today? The alternatives consist of the gauges developed by Kodak and Fuji. But Kodak have already withdrawn double-8mm, the Ektasound cartridge for Super-8 sound and all 16mm loadings except the 100ft spool. Fuji have withdrawn their Single-8 gauge in the U.K. This only leaves Super-8 silent cassettes and 16mm 100ft spools of Kodachrome or black-and-white. The Super-8 cartridge may be withdrawn at any moment as we have seen and the cameras which are built for idiots will become useless: this was an upstart gauge which should not be seriously entertained. 16mm now back to square one with its 100ft camera spools has more in its favour, but, as originally, the bulk of the cameras needed for this loading (and again the outlay) compares unfavourably with the small and handy charger loading 9,5mm camera for portability. It is astonishingly still the case that 9,5mm offers the cheapest camera loading of any gauge including Super-8, which is not to say it is cheaper to run, for it is not. On a cost per minute of screen time basis it is more expensive than 16mm for colour, but appreciably cheaper for black-and-white. The range of materials available to amateurs for filming in 9,5mm cameras is greater than that of any other gauge today, something which could not have been predicted in 1960, and which most will find incredible. 9,5mm Fujichrome is directly comparable in screen quality with 16mm Kodachrome and obviously greatly superior to Super-8.

It goes without saying that such results are not guaranteed. In the early days of 9,5mm ciné Iliffe & Sons Ltd. under the auspices of the *Amateur Photographer* published an excellent handbook by Harold B. Abbott entitled "Motion Pictures with the Baby Ciné" which is fondly remembered. Unfortunately it only covered the first decade of developments with the gauge. His 1935 sequel *The Complete 9,5mm Cinematographer* is similarly outdated from a modern perspective. The much later Focal Press publication *How to Use 9,5mm* by D. M. Neale was a big disappointment, containing little detailed information which did not apply to every gauge. It will be the intention of the present volume to make up for this deficiency and provide relevant and current information. Except insofar as it must necessarily cover the subject of projectors, it is not aimed at print collectors nor is the entertainment (?) medium of 9,5mm optical sound referred to. Cinematography is film making.

As to the reasons why anyone should bother, they are many and various. Film is a virtually permanent medium. One can still see many of the first films

ever made. This ought to be an important, perhaps the most important factor. If one is slaving away over an animation table, for instance, does one not wish to hope those efforts will survive time? Film is a master medium from which it will always be possible to transfer to the ephemeral media carriers of today or future times. The creative stage of film making known as editing is incredibly simple and inexpensive: essentially the only equipment needed is a pair of scissors, magnifying glass and joiner.

The projection of a film on a large screen in a dark cinema, even at home, carries an impact which television lacks. In the future large screen television may become a common thing, but the cinematographer has always had the big picture. The cost of acquiring a complete outfit for 9,5mm cinematography today may be put at around £100. No video equipment is available at this price. The running cost for colour film approaches £10 per minute of screen time or £7.50 for black-and-white. It is easy to pay £1300 or £1500 for a modern video camcorder, all payable up front. That represents many reels of film and hours of fun. Obsolescence plays little or no rôle in cinematography, whereas it is the very essence of videography. A new system is always just around the corner. Whereas the modern camcorder is an ephemeral toy, however marvellous its specification, 9,5mm ciné film has been with us for over 77 years. That it is of no interest to the marketing fraternity should fill us with comfort.

This book does not seek to cover all that has happened in the 9,5mm ciné sphere since December 1922 or 1923, but only those aspects likely to be of interest to present day practitioners of 9,5mm cinematography. Film costs have certainly not risen in line with most products over recent decades and in real terms may be at an all time low, but still they are certainly not negligible and one could hardly recommend loading a £9 film into a camera with a poor lens or a projector which lacks the means to handle it with complete safety. On the other hand most 9,5mm equipment was originally sold at popular prices and that which only cost five or six pounds when new will not be ignored where it is considered to be still serviceable. Where no mention is made of any particular item the reader may therefore draw the conclusion that for one reason or another the writer has evaluated it and rejected it for current use. The list of such equipment is very long indeed and probably headed by the highly specified and widely advertised pre-war Argus triple turret ciné camera; its body was made from the same unstable Mazac zinc alloy as the cast shutter/flywheel of the Baby projector and it is doubtful if a single working example survives today. Similar problems have excluded the early Pathéscope Lux projector from serious consideration.

Douglas Macintosh

Isle of Man

CHAPTER ONE

The Early Days (1923 - 1930)

The original Pathé Baby ciné camera, launched in December 1923 under the direction of Roger Pathé and built by Etablissements Continsouza in Paris, was most aptly named. It weighed only 600 gr. and measured just 105 x 88 x 41mm. The body was covered in brown Morocco grained leather. An accurate open frame collapsible viewfinder was fitted to the top of the camera. Some later versions used an optical front element, which was engraved with a cross hair for alignment but was less convenient and accurate. The lens was fitted to a flange screwed to the front of the body. Most commonly this was an f/3,5 Hermagis of 2cm focal length, always afterward the standard for 9,5mm cameras, but other lenses such as the f/3,5 Berthiot Stellor or more expensive Zeiss Tessar f/2,7 were used. Below the lens panel was a button to release the catch of the hinged door. On the mechanism side of the camera is the winding crank handle with the legend "2 turns to the second" and a clockwise arrow embossed in the leather around its axis. Directly below is the film counter labelled "Compteur 1200 Images" which had to be zeroed manually.



The counter reading in hundreds of frames appears in a window of the dial which rotates continuously during operation. 1200 frames is 30 feet, but the films issued for the camera usually ran for only 1100 frames. The crank shaft exposed 7 images per turn, so a film speed of 14 f.p.s. was evidently recommended for maximum economy and matched the cranking rate for the Baby projector. A quarter-inch Whitworth tripod bush was fitted to the base, which was of course essential,

though the need for a sturdy tripod made a nonsense of the tiny proportions of this delightful little camera. The interior of the camera was admirably simple. The gate aperture plate featured side runners for the edges of the film, and (unlike the later Motocameras) did not touch the emulsion. The pressure pad bearing on the film base was not relieved. A single claw propelled the film synchronised with a disc shutter (again superior to Motocameras). The gate pressure pad and properly relieved film guides are carried on a frame mounted on a pivot post near the camera base and sprung so that when the camera door is opened the gate is just sufficiently open to insert a film. Shutting the door closes the gate. Depressing a small catch in the mechanism plate near the top of the camera enables the gate to be fully opened for inspection and cleaning.

My own first home movies were shot with one of these cameras in 1952 on Gevaert film and were entirely satisfactory. At 15 I had had no previous experience of or instruction on loading the chargers in a darkroom, but seem to have accomplished the task under the stairs without mishap. Naturally the sturdiness of the tripod (mine was not very) makes a notable contribution to the outcome. I have the official issue in its original cardboard tube and can state without hesitation that it was inadequate. A heavy duty tripod with smooth pan-and-tilt head is essential for optimum results. This advice also applies to motorised cameras and Mr. Abbott was quick to observe in his book that the failure of Pathé to incorporate a tripod bush in their cheaper Motocamera Model B in 1932 was a retrograde step.

In 1926 the French clockwork Motrix attachment became available and could be added to the camera by the user. It transported about 10 ft per winding but added a kilogram to the weight of the little Baby, as well as ruining its sleek appearance. The following year the Swiss produced an even heavier attachment called the Camo which had to be factory fitted but ran a complete film per winding. These attachments are not now worth the time of day. However there are those who consider the hand-turned camera still has its uses, particularly in titling, due to the ease of inspecting the gate image (no motor to run down) and the even exposure given by the disc shutter.

In 1928 Pathé brought out the Motocamera, a most excellent machine in many ways and definitely a usable camera even today. Its heavyweight clockwork motor fully wound would run for a minute and expose almost an entire film. Its enclosed optical viewfinder was of generous proportions and its axis was minimally displaced from the camera lens, practically eliminating parallax error. The camera was designed to accept a new, bigger Pathex (or "P") charger which would accommodate a slightly larger roll of film (47mm diameter roll compared with 44mm for the Baby charger), actually the full 10-metre length shown on the geared film counter below the viewfinder eyepiece.

Unfortunately the temptation for commercial loaders of these magazines to subdivide 100 or 400ft rolls into 4 or 16 charger loads rather than 3 or 12



Pathex, Ilford Selo and Gevaert 'Link' chargers for Motocamera

proved too great. No-one was expected to open the charger to see how full it was and the smaller load was likely to reduce the chance of jamming. Also Pathé cameras which succeeded the Motocamera had a decidedly vague counter system. Present-day users of these cameras loading their own P chargers can therefore expect a film duration of 1 minute 20 seconds, instead of a minute if you're lucky. The P charger adopted the straightforward lid fastening spring clip system used on later Baby chargers and are therefore eminently suitable for home loading. They are still available from various sources priced at only £1 or £1.50 (see Chapter 9).

The Motocamera weighed 1,4 kg and measured 12 x 11 x 6 cm. Its 16mm competitor, the Ciné-Kodak Model B, weighed 2,3 kg and was more than twice the size. The starting lever incorporated a safety-lock and if pivoted fully anti-clockwise locked in the motor run position. A quarter-inch Whitworth tripod bush was fitted to the centre of the base and a leather carrying strap admitting four fingers was fitted to the top of the body. Altogether an easily hand-holdable ergonomic package. It sold for ten guineas (£10.50).

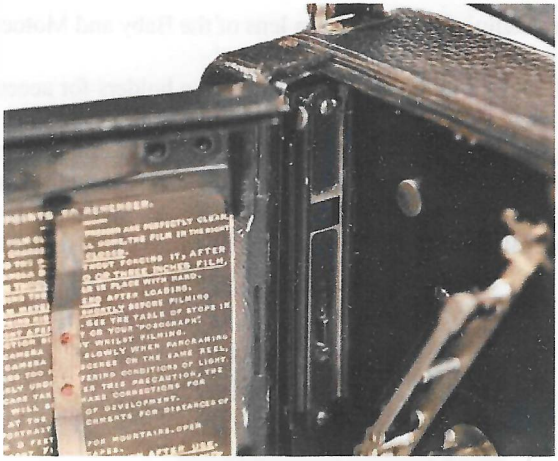
The normal standard lens for the camera was the same Hermagis used by the Baby, but demand was so great as to easily outstrip the capacity of a single optical manufacturer once again. Alternative 3-element anastigmat designs employed were the Berthiot Stellor and Krauss Trianar. Wider aperture lenses were to become available later from Hermagis, Krauss, Zeiss and Hugo Meyer.

A rather bewildering "inching knob" is fitted to this and all subsequent Motocamera designs. The clockwork mechanism has no tendency to jam and if poor loading of the charger or camera gate are causing a problem the inching knob (rotating twice per second) is not going to help.



A button below the film counter is depressed to open the camera door, hinged at the front. The film compartment is uncluttered. The usual slipping clutch take-up dog from the Baby is featured and has the virtue of locating the charger unequivocally and rapidly. Studs and corner guides for the 'P' charger aid the process. The motor speed setting screw is found at the base of the chamber next to a pin on which the sprung hinged pressure pad assembly is mounted. A catch at the top of the gate is depressed towards the lens and the pressure pad is then released by a few millimetres to allow insertion of the film loop while the charger is in place. A knurled pillar at the top of the pressure plate assembly allows the frame to be drawn over a sprung catch and opened wide for gate inspection and cleaning. This reveals the twin claw drive working in tandem with a guillotine shutter. It also reveals that the pressure pad made from polished stainless steel bears against the full width of the film for a length of 4 centimetres. In other words it is not relieved over the picture area. In practice scratches on the film base are rare and, provided the pressure pad is clean, are more likely to arise from the channels of the film charger which are difficult to keep clean.

More serious, however, is the poor design of the gate aperture plate, evidently a thin stainless steel pressing with raised edge guides and held in place by a screw at top and bottom outside the film path. A half-hearted attempt to relieve the picture area is made in two areas painted black, possibly doing more harm than good. The side runners are approximately 2mm wide encroaching well into the picture area and around the gate aperture itself there is no relief whatever. Sharp edges are traversed by the emulsion at the bottom of the gate aperture and at the bottom of the upper black painted area, which must be carefully inspected for signs of emulsion



collection. Some very mild abrasion of these sharp edges may be called for, there being a surprising lack of uniformity in the manufacture of this vital component. Testing with a dummy film is advisable to check this point before serious filming is undertaken.

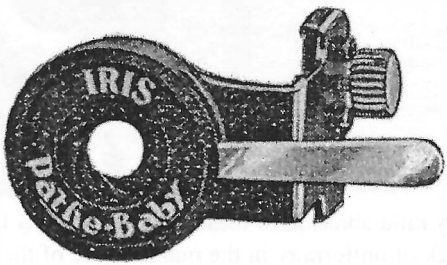
After so many years it will be necessary to clean the camera optics using a cleaner such as Calotherm on a cotton bud. If it is necessary to clean the inside of the viewfinder it can be removed by unscrewing the eyepiece. All the lenses employed the continental aperture numbering (f/3,5, 5, 10, 14) now obsolete, but refreshingly simple. It is recommended that as these lenses are uncoated an exposure of f/10 be selected for Fujichrome Velvia in bright sunshine and f/5 in cloudy bright (no shadow) conditions. Provia will require one stop less.

Because the depth of field of the F20mm fixed focus lens would not result in a sharp image of close subjects except at the smallest apertures, Pathé marketed an inexpensive set of three close-up lenses (for 2m, 1m and 0,5m) along with a "light filter" (yellow pre-war and UV post-war) in a small leather case. Each supplementary lens incorporated a lens hood and was a push fit on the 16mm

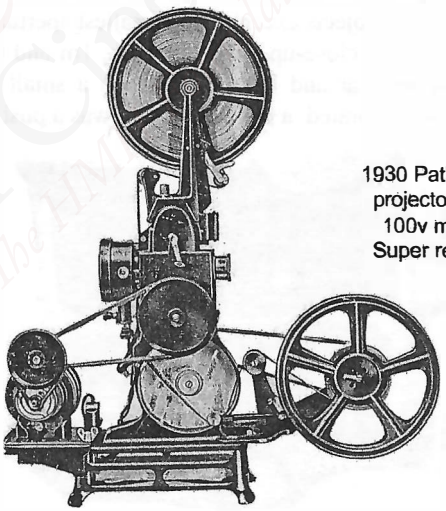


diameter rim protruding from the 20mm lens of the Baby and Motocameras Luxe, B and H.

Many Motocameras were fitted with slide-in holders for accessories below and beside the lens, which would now be rare collectors' items. One such was the Iris Fader designed to fit the side holder, as the lens iris could not be completely closed. Nor indeed did this external iris close completely and the effect it gave was a diminishing (or increasing) circular vignette, as favoured by Chaplin on occasion, quite a different effect from a fade. There was also a waist level finder.



The 1920s were not to see much improvement in the lamentable situation regarding projectors for 9,5mm even though 350,000 Baby projectors were sold. In 1929 a Heath Robinson Super reel attachment for 300ft spools was introduced and an electric motor for 100v supply made available. But the poor performance from the 20 volt bulb, small aperture lens and flickery shutter remained and, despite their reputation for prints, Pathé allowed other manufacturers to take over the lucrative market for projectors of superior performance. Similarly during this initial period Pathé enjoyed a monopoly with their cameras. All this was to change dramatically in the ensuing decade.



1930 Pathé 'Home Movie' projector complete with 100v motor drive and Super reel attachments

CHAPTER TWO

The Golden Era (1931 - 1939)

Despite the Depression and general lack of affluence even among those in work during these years, moving pictures were the irresistible craze of the age along with radio. Before the appearance of television for a few thousand well-to-do Londoners at the end of this period, the possibility of home entertainment through film libraries offered everyone who could afford a projector the chance of a film show. The silent film was only now being displaced in professional cinemas by the talkies, so the home audience saw nothing odd about silent movies. The Pathéscope catalogue offered the British public the widest choice of product, the hire rates were the lowest and 9,5mm libraries were the most common. The Kodak equipment, even for 8mm when it arrived in 1932, was frankly in a higher price bracket than most people could contemplate and Kodak had to build up their Kodascope film library from scratch.

Therefore if you had a projector the likelihood was that it would be for 9,5mm films and, if you contemplated cinematography yourself, the next step would be a 9,5mm camera.

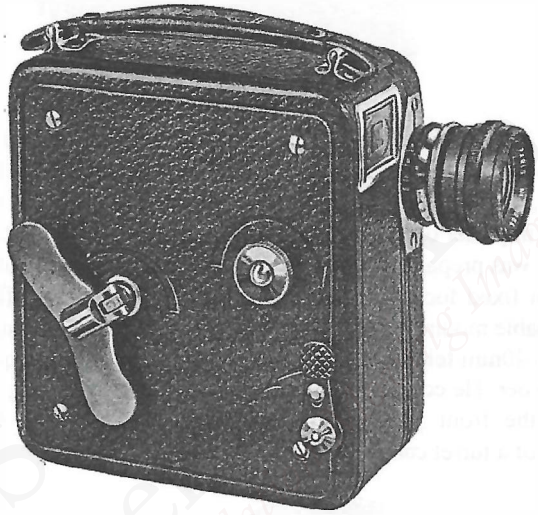
Pathé Cinéma and their British concessionaire Pathéscope Ltd. may have had the field to themselves for the first decade of operation, but they did not stand still. Kodak launched their double-8mm gauge with the Cine-Kodak 8-20 camera with f/3,5 fixed focus lens pitched at the same price as the Motocamera, ten guineas. But this move to greater economy was forestalled by Pathé Cinéma, who introduced their Mondial B camera in 1931, which



Pathéscope launched in Britain as the Motocamera B the following year priced at six guineas (£6.30).

The Motocamera B was once more a triumph of design and appeared in time to be described in the third and final edition of Mr. Abbott's first book, as did the original Bolex-Paillard Model P (for Pathé) and D (dual gauge) ground-breaking projector, soon to be superseded by the PA and DA models with Automatic stop for notched titles. The camera was a scaled down version of its predecessor weighing only 1,1 kg and measuring 11,5 x 10 x 5cm., in fact as small as the dimensions of the P charger would permit. In some respects it seems to have a closer affinity with the Baby than the original Motocamera, and appears more like an industrial product. The Morocco black leather covering is gone along with the alloy body case, to be succeeded by a pressed steel casing finished in black crystalline paint. The vital leather carrying handle is still preserved but no tripod bush is fitted; some economies had to be made to achieve the lower price, but this seems a false one. The motor had the same capacity as the original Motocamera and the 2 cm f/3,5 Hermagis lens was ostensibly the same (second grade?) but three other major economies were introduced. The continuously driven metre counter was abandoned in favour of one which moved only at one metre intervals thereby permitting errors or uncertainty of six feet in estimation of film length. This is rather serious in a roll of only four or five times that length, but could be reduced to half if one took the trouble to run the camera until the metre change had just taken place before manually re-setting it to zero on film loading. The size of the optical viewfinder was considerably reduced, but is still better than that of many similar cameras. Finally the gate was re-designed. It is superior to the original Motocamera in that the Baby pattern employing side runners of only 0,75mm width and therefore correctly relieved over the picture area of the emulsion is again used for the gate aperture plate, avoiding the chief bugbear of its parent. But the pressure plate, this time chrome plated, can no longer be hinged away for inspection and cleaning. For loading it is moved backward and upward, and remains ajar until pushed back when the film is inserted. The open position is insufficient for thorough inspection and pressure pad removal requires some disassembly as the post on which the pad is mounted does not have a knurled nut which can be undone to allow the removal of this component, as fitted to later Motocameras, the H and Prince. At the same time it must be admitted that the improved gate aperture plate means the collection of emulsion corns is less likely and in its open position there is some access for a cleaning brush. The camera door is hinged at the rear and opened by a push-button below the lens like the Baby. The motor release knob could be screwed down to prevent operation, unscrewed for intermittent running or screwed down again in the run position for lock-on operation. The camera was altogether a neat and deservedly popular production. With its P charger loading it is certainly still usable today. However, the steel casing produces rather more mechanical noise than other Motocameras.

The original Motocamera, however, was to remain in production for some years. At this point it clearly became a luxury model and Pathéscope named it the Motocamera Luxe. However luxury was scarcely a byword for Pathéscope customers who were still waiting for a decent 9,5mm projector to appear, and would be unlikely to see the undoubted advantages of the older design as being worth the extra cost. Even when designs of more elaborate specification were eventually produced, sales would be small and examples are rarely found today, since those who could afford such specifications generally chose the Kodak gauges.

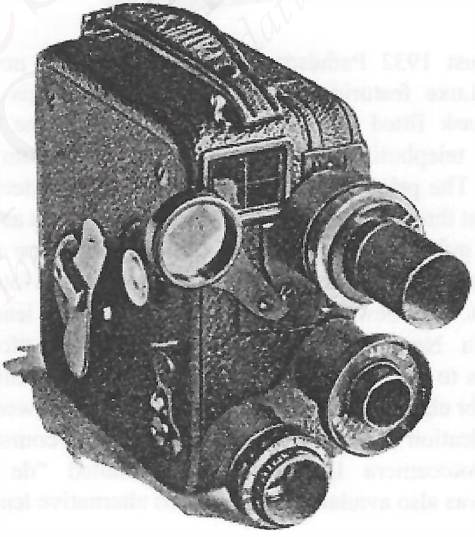


In August 1932 Pathéscope Ltd. announced a new version of the Motocamera Luxe featuring a focusing f/2,5 Hermagis 2cm lens with a transparent mask fitted in the viewfinder to show the field of a 40mm Hermagis X2 telephoto attachment, which screwed into the front of the standard lens. The price of this model was hiked to sixteen guineas and the attachment cost three guineas, but if the two were bought as an outfit the price was eighteen guineas (£18.90). In October Pathéscope announced that it would be quite impossible to fit the new lens outfit to Motocameras with the f/3,5 Hermagis. This news must have gone down like a lead balloon with the faithful, as in November it was announced that "following renewed representations to our Works" the conversion was after all a possibility and could be had for eight guineas, the difference in price between the old and new outfits. Modification of the Motocamera B was not of course on offer.

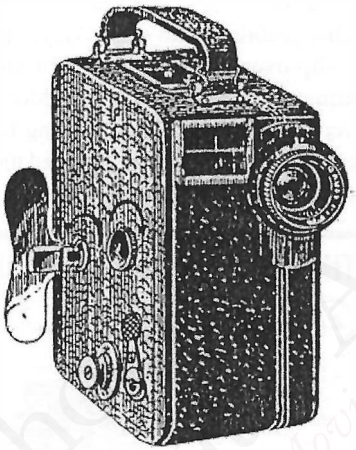
The Motocamera Luxe (sometimes called "de Luxe" even by Pathéscope) was also available with various alternative lenses distributed by



Pathéscope Ltd. and others. With the f/2,9 Zeiss Triotar it sold for sixteen guineas and with the f/2,7 Zeiss Tessar four element lens it cost £21.88, both lenses being of fixed focus. Another wider aperture lens was the Krauss Collix f/2,7 of fixed focus. The British importer of lenses from Dr. Hugo Meyer of Goerlitz was A. O. Roth of Catford. He was prepared to fit the Motocamera Luxe or the Model B with a Meyer f/2,8 lens in fixed focus or focusing mount. He would also fit the Luxe with an interchangeable mount to take a range of Meyer lenses including the f/1,5 focusing Plasmat, f/3 40mm telephoto and yet more powerful lenses requiring an additional side viewfinder. He could also mount holders for lenses using his interchangeable mount on the front of the camera, which could give a slightly misleading appearance of a turret camera.



In 1934 Pathé Cinéma launched a new version of the Motocamera in France rather confusingly called the "Lux" in tribute to the light gathering power of its f/1,8 Krauss focusing lens. It also featured a variable speed control for the range from 10 to 20 f.p.s. and an elaborate waist-level viewfinder, which worked exceedingly well to facilitate low angle or candid shots. Sliding a button along a slot on top of the camera opened a viewing rectangle and lowered a mirror at 45° into the path of the optical viewfinder giving the usual laterally reversed image.



All these Pathé cameras will normally be found to be quite serviceable today.

In the summer of 1933 the aforementioned Mr. Roth also started a trend by importing an alternative to the Pathé product fitted, naturally, with Meyer Optics. This was the Cine-Nizo range of cameras made by Niezoldi & Kramer GmbH of Munich, one of the longest lasting of all ciné equipment manufacturers, whose products tended to reflect the excellence of German engineering. The first example to arrive in Britain was the Model F, which bore a considerable resemblance to Pathé's Motocamera, except that the viewfinder was not enclosed, making it easier to keep clean.

The motor release took the form of a recessed button in the back of the camera below the metre counter and a knurled knob on the winding key side could lock this button on or off. Under a sliding cap was a single picture shaft operated by a detachable handle and there was a variable speed dial offering 16 or 32 f.p.s. or speeds in between. The single claw intermittent was synchronised to a disc shutter. Whilst it was possible to open the pressure pad well clear of the gate in the absence of the P charger, no provision was made for the gate to be opened slightly to admit the film loop on loading. Instead the sprung pressure pad had a bevelled edge and it was necessary to squeeze the

film into the tensioned gate. While the gate aperture plate bears some resemblance to the Pathé Motocamera pattern in that it is unrelieved around the aperture itself, the component is engineered from stainless steel and then highly polished with smooth contours so there is no suspicion of a sharp edge in sight. Once satisfactorily loaded the camera may be expected to yield excellent results with no scratches from the gate. However the mechanism is somewhat noisy. The cheapest version with Meyer Trioplan f/2,9 fixed focus lens cost £14.50 or in a focusing mount cost £16.25, while the camera fitted with Meyer Plasmat f/1,5 F25mm focusing down to 0,6m sold for £31.50. The Plasmat could also be supplied in a bayonet mount for interchangeability with other Meyer lenses including a 2-inch telephoto which used a slip-over mask for the front viewfinder element. More powerful lenses would require the side finder to be added.

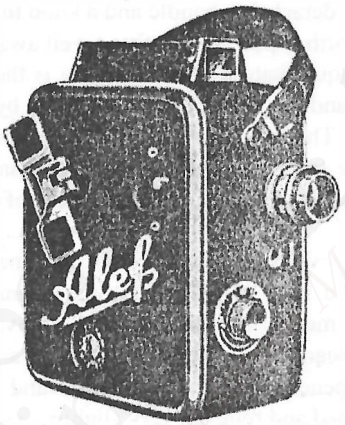
Very soon Nizo were to introduce spool loading for nine-fivers offering at last the prospect of longer film loadings. They produced models for 50ft. and 100ft. spools, with sprocket feed naturally, and a range of motor speeds.



The entire range was advertised as in stock by a Victoria camera shop in March 1934. The Model F in this instance had a Steinheil Cassar f/2,8 fixed focus lens (not interchangeable) and was competitively priced at only £12.50. The 50ft Model M with speeds from 8 to 32 f.p.s. had the same Cassar lens in an interchangeable mount and sold for £22 with lens. The Model K3 for spools up to 100ft. boasted a triple lens turret, speeds from 8 to 64 f.p.s. and parallax correction for its open frame finder and cost £31 body only. Peeling & Van Neck Ltd. had become sole importer. But they did not catch on and are rarities today. One reason

for this was the difficulty of obtaining film loads in Britain, where Pathéscope, who did not then market spools, had the 9,5mm scene sewn up. Another was the belief that edge fogging would pose a greater problem with 9,5mm than with the Kodak gauges. But chiefly the reason was economics: it was the short length and therefore low cost of charger loads that made cinematography a possibility for all but the wealthy.

The German camera industry led the world during these years and it may seem a little surprising that it devoted so little attention to the 9,5mm market. Generally this has been attributed to the fact that the format was the invention of "the old enemy" and by comparison their support for the Kodak gauges was prodigious. One other manufacturer, Alef, produced a low cost 9,5mm outfit. Their Model B camera certainly competed with the Nizo Model F, as it took the P charger, had speeds from 8 to 32 f.p.s. and an f/2,8 Meyer Trioplan lens in an interchangeable mount, yet sold for £11.86.



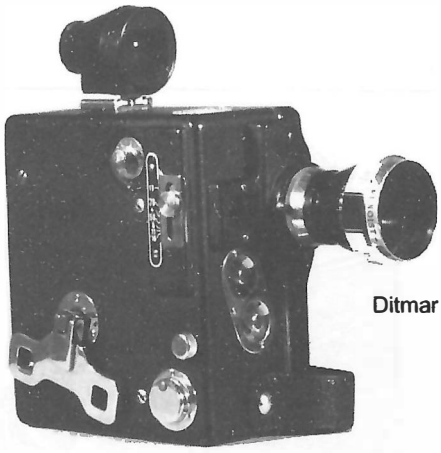
Britain was then and, as the weather has not changed, still remains a most lucrative market for any manufacturer of home entertainment apparatus. But in the years under review all imports of ciné equipment were subjected to a hefty duty of 50%, doubtless to encourage home manufacture, some of which occurred. It is not generally appreciated that the Austrian giant Eumig began ciné camera manufacture with three 9,5mm cameras, the Models C1, C2 and C3 during the years 1932 to 1936, but unlike their 9,5mm projectors they were not imported. However, when their revolutionary electric C4 double-8mm camera appeared before the War it was imported and widely advertised as there was no British manufacture of 8mm cameras, except by Kodak Ltd. using imported American components.

Another Austrian manufacturer, Ditmar, made a notable contribution to the 9,5mm camera scene during this period though, producing models for both the P charger and 50ft daylight spools. For the most part they employed French

Berthiot lenses and eventually offered a choice of extinction type or selenium exposure meters. They were well engineered and finished machines and are still usable today, though the take-up tension may need oil if they are not to produce picture slip. All charger cameras of such an age should have the take-up 'dog' checked and lubricated as necessary. If by holding the dog protrusions stationary you can slow the motor speed, the slipping clutch is obviously not slipping enough. Little torque is needed to wind film satisfactorily.

The charger version weighs almost 1,5 kg and measures 10 x 10 x 6,5 cm. ignoring various protrusions such as the lens. One is immediately impressed by the extensive use of chromium plating which extends even beneath the paint finish (normally a black wrinkle but exotic alternatives exist). The design has a great many thoughtful touches which appeal to the enthusiast. The front boasts two release buttons for the motor, one delivering 16 and the other 32 f.p.s. The camera is similar to the Nizo in having a continuous geared film counter, a covered trick shaft employing the identical detachable handle and a knob to give locked-on run. A Continental a-inch Whitworth tripod bush is fitted well away from the centre of gravity, unfortunately. A unique feature of this camera is the viewfinder, which displays the aperture setting and footage above the scene lit by a small translucent panel set into the camera top. The lens aperture is set by a sliding knob on the side of the camera some distance from the lens itself. This arrangement is certainly convenient for aligning a pointer with the indicator needle of the selenium meter, which added £6 to the price.

The viewfinder had no vertical parallax error and the eyepiece could be moved sideways (admitting a blue cel into view as a reminder) to eliminate horizontal parallax at 0,75 metre. The Ditmar had a pivoted pressure plate assembly like the Pathé Motocamera. On being pushed upward it stood ajar ready for loading but could be opened wide for inspection and cleaning. The gate aperture plate is highly chromed and relieved very slightly over the picture area by side runners. The pressure plate is black and drive is by a single claw linked to a disc shutter. The 50ft. spool version cost about £4 more than the charger type and added bulges to accommodate the spools above and below the body, so it no longer stands but is convenient for hand holding. The cheapest charger version fitted with f/2,9 Steinheil Cassar fixed focus lens cost £12.88, there was a Berthiot Cinor f/2,8 fixed focus version for £2 more and for £4 extra you got a Berthiot Cinor 2cm. f/1,8 focusing to less than half a metre. The lens focus is engraved in both metres and feet and the footage counter is graduated up to 32ft. A leather carrying strap is fitted to studs near the camera base, probably because an overhead strap may lead to the translucent panel being obscured. This and various other features tend to indicate a design philosophy shared with the Eumig C4. The metered versions only appeared shortly before the outbreak of hostilities and consequently are rare. Rather surprisingly the most common survivors seem to be those featuring the f/1,8 lens. The post-war Berthiot Hypergonar 8 CinemaScope

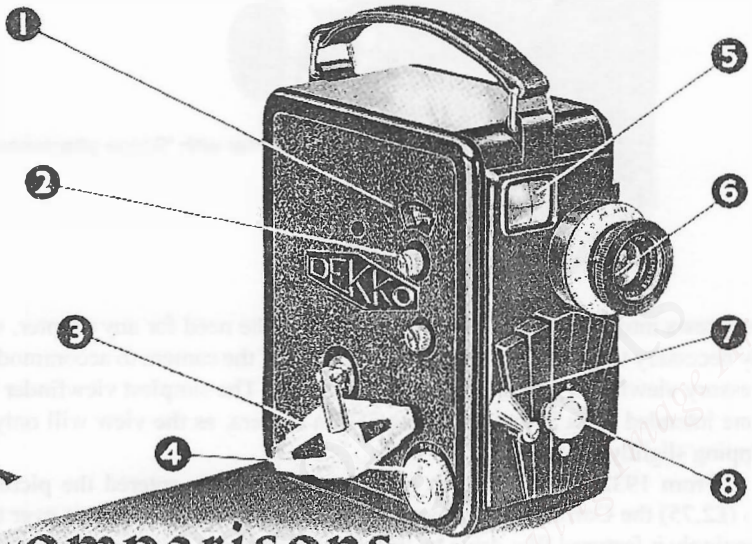


Ditmar with 'Scope attachments

lens screws into the hood of this camera without the need for any adapter, so it is only necessary to fit an accessory shoe to the top of the camera to accommodate an accessory viewfinder and one is all set for 'Scope. The simplest viewfinder to use is one intended for a 35mm lens on a 35mm camera, as the view will only need cropping slightly for accuracy.

From 1932 onward British manufacturers finally entered the picture. At 55/- (£2.75) the Coronet camera was the cheapest the nine-fiver was ever to see. Amazingly it featured film drive by intermittent sprocket. Its clockwork motor ran a whole P charger of film and it had an f/3,9 lens with iris diaphragm of sorts. However the viewfinder image was very small and its gate block, housing a barrel shutter, was made from the dreaded Mazac zinc alloy which will now be disintegrating. Understandably the finish of these cameras was not designed to last more than half a century. Miller cameras were clumsy in design and execution and it is some testament to their desirability that they remained the only cameras unsold and still being advertised during the War. The Midas camera/projector was an instant museum piece taking special and long obsolete chargers, though it was the first amateur movie camera with built-in electric drive. The Campro is a most weighty hunk of metal, though I have seen sharp films taken with it. The Argus from Thames Ciné Products Ltd. has been mentioned earlier.

But one British company did come through with the goods. Dekko Cameras Ltd. of Slough launched a revolutionary camera in the summer of 1934. The case was made entirely of bakelite mouldings and the design seemed appropriately 'art deco' — at least the front panel and winding key produced that effect. It cost the same as the Motocamera B but offered many important advantages even over the Motocamera Luxe. The chief feature which has ensured its longevity is its 'C' lens mount, which will of course accommodate the most modern lens equipment you can find, even a zoom lens. The bakelite did not offer a huge weight saving as the camera still clocked 1,15 kg, but as originally advertised the finish of the



Comparisons

are the surest way of deciding which Cine Camera to buy Compared feature by feature with larger and much more expensive cameras the DEKKO always holds its own Great smoothness of operation, rock-steady slow motion, all metal parts chromium plated, handsome Bakelite case giving long wear without the shabbiness which is inevitable with leather covered or enamelled metal cases, in fact, every asset which appeals to the 9 5mm. enthusiast. The deciding factor of Dekko supremacy is its moderate price— £6 6s. 0d. Send for free booklet to CAMERAS LTD., SLOUGH, BUCKS.

DEKKO

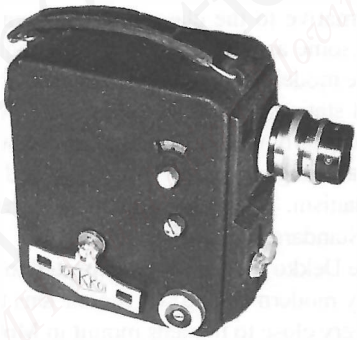
1. Footage Indicator giving clear reading.
2. Indicator resetting knob.
3. Substantial non-rotating winding key.
4. Speed Regulator giving speeds from 8.64 frames per second.
5. Brilliant view finder of the direct erecting type.
6. Dallmeyer F2.5 lens, fixed focus 20mm. Other lenses available.
7. Substantial Operating Trigger.
8. Dekko Selector offering 3 positions: B for normal, T for continuous operation and I for single frame exposures.

I believe that it would be detrimental to my interests to be responsible for the advertising of any product but the best of its kind that is why I am proud to advertise the Dekko Camera.

W. Kirkland Smith

bodywork presents a perfect appearance even today. All metal fittings were chromium plated. A range of motor speeds from 8 to 64 f.p.s. was featured, though the setting knob was only labelled 'Slow', '16 Normal' and 'Ultra Fast'. A small slotted inching knob was fitted. Assuming the motor speed governor is still functioning, and they do wear out, the speed can be set quite closely by reference to the extremely accurate geared footage counter. A dial on the camera front had three positions: 'B' for intermittent running, 'T' for continuous locked on run and '1' for single frames, the release being effected by a conveniently placed chrome lever alongside. The viewfinder front element showed the field of a 20mm lens with a cross-hair and engraved rectangles for 25 and 75mm lenses. The image size lies somewhere between the Motocamera Luxe and B, but closer to the former. The film compartment door had a vulnerable hinge, and is supported top and bottom by two struts allowing it to be opened through 90°. The clockwork motor would transport a whole film on one winding. The stout leather carrying handle across the top of the body (measuring 11,5 x 12,5 x 6 cm.) and motor release lever projecting slightly from the front corner made for one of the most ergonomic designs of any ciné camera.

The Dekko was aggressively advertised with full page advertisements in the ciné press and sold in large numbers. After a few years a 'de Luxe' model appeared with a conventional cast alloy casing, black crackle paint finish and some small



design changes affecting the motor release on the front panel. The most important addition was an accurate parallax compensation device working down to 2 ft. by rotation of the viewfinder eyepiece. Although the same front lens was used for the viewfinder the aperture was slightly smaller than the bakelite version and was additionally masked off for a 25mm field. Indeed top quality 'C' mount lenses have always been a rarity in 20mm focal length. Although the bakelite model was only sold for a few years, the alloy version continued after the war into the early 1950s, a long production run for any ciné camera. The chromium plating has held up well with the notable exception of the motor speed setting knob on which the legends are commonly illegible in most samples today.

The gate design for these cameras seems to have undergone constant change in detail. It is rare to find an example which does not exhibit signs of considerable film wear (chrome worn off), confirming the popularity of the Dekko as a machine for making movies; in fact it is difficult to think of any other ciné camera of which this can be said. One may be inclined to blame poor quality of chromium plating, but other chrome components such as the winding key have retained their finish over many years. Drive is by a single claw linked to a disc shutter. The gate aperture is but part of a large highly chromed cover for the mechanism. Some examples exhibit slightly raised side runners to prevent emulsion contact in the picture area but earlier models are quite smooth. The pressure pad member actually contains two sprung pads to bear on the film base. The upper one facing the gate aperture takes the form of a 9,5 x 9,5mm rectangle with a raised perimeter painted black in the recess and the lower one measuring 9,5 x 15mm has a central slot and faces the claw. It is the edges of these pads and the parts of the aperture plate they face that commonly exhibit signs of wear by friction as may be expected, but the wear is smooth and should not be a cause of scratches if cleanliness is observed. On the early Dekko the pressure pads were mounted in an alloy frame which was retained by a screw in a slot in the chromed brass frame holder. The gate was simply pushed open for loading by a gap of about 4mm or closed for filming by pressure on a raised rib of the alloy frame. Removal for inspection and cleaning required the retaining screw to be undone, certainly a cheap alternative to the classy Motocamera arrangement adopted by Ditmar, but rather tiresome as ideally inspection is required after the passage of each film. The de Luxe model had a pressure pad assembly of solid chrome plated brass which remained stationary with a sliding knob withdrawing or advancing the pressure pads; in the fully withdrawn position the whole pad assembly could be lifted off the camera, being located on two pillars and normally held in place by the sliding catch mechanism. This improvement only arrived in 1939, the last year of production for the Standard bakelite model.

Results from the Dekko today may be expected to be first class, particularly as one can employ any modern coated 'C' mount lens that does not obstruct the viewfinder, which is very close to the lens mount in Motocamera fashion.

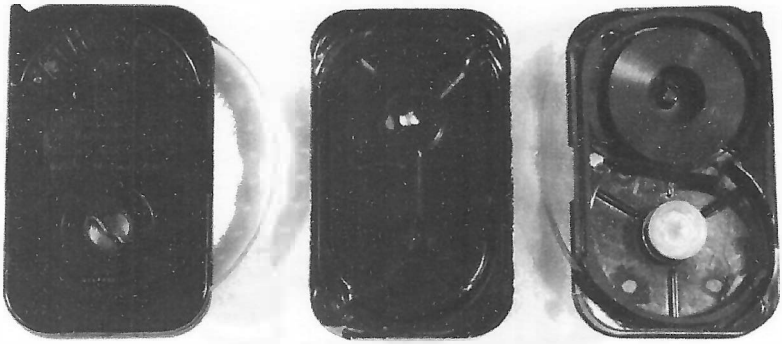
Meanwhile Pathéscope Ltd. were flourishing as their plant on North Circular Road, Cricklewood, where films were printed, packaged and processed, continually expanded. Equipment manufacture began with the Kid and Imp, cheaper versions of the Baby projector, but progressed to the much superior 200B model early in 1933. In 1938 they began to sell the French National camera to be known here as the Pathéscope H Motocamera, which bore a considerable resemblance superficially to the Motocamera B. However it was even smaller, this being accomplished by the rather regrettable introduction of yet another 30ft charger design, today known of course as the 'H' charger, which was to remain current issue until the demise of Pathéscope Ltd. in 1960. This



re-design took account of the fact that there was no physical need to provide space in the charger for two film rolls, as one would replace the other during filming. Accordingly a hinged divider flap is fitted between feed and take-up roll. Unfortunately the H charger will only accommodate a roll of about 43mm diameter with comfort (compared with 47mm for the P), which restricts the load to about 9 metres. Another bad feature is the lid fitting. Gone is the simple spring clip of the P charger. The new lid is a push-on fit and can only be removed by the insertion of a suitable tool in slots, to be found at the midpoint of each long side, and prising upwards.

But the Pathéscope H represents in the opinion of the writer the most ergonomic design of ciné camera ever produced, and as with the Dekko results can stand comparison with those obtained on 16mm film. The body weight is the same as the Standard bakelite Dekko but the case size is reduced to 11 x 10 x 4,75 cm. The motor as usual runs a whole film and even on old examples does so very sweetly and quietly. This is largely due to the adoption of alloy case castings for the first time on a Pathé camera. These were finished in a black crystalline paint with chromium plating on all fittings. A stout leather carrying strap is fitted to the top of the camera which admits the four fingers of the left hand to be inserted for hand holding, while the base of the camera has a ¼ -inch Whitworth tripod bush. The viewfinder and metre counter are as fitted to the Motocamera B, but the motor release has the added feature of delivering single frames if pushed forward instead of back. The gate aperture plate resembles that of the B except that the area immediately surrounding the picture area is unrelieved. However the pressure pad can be removed in this case by unscrewing a knurled nut from the top of the pillar locating its holder frame.

The biggest advance made by this design was provision for interchangeable lenses employing a special Pathé screw of s-inch diameter. These possessed a rather long thread as the lens rear element had to be inserted a long way into the camera body. With its most common lens, a fixed focus 23mm f/2,5 from



National Optical Co. of Leicester, this camera sold for £7 in 1938. The viewfinder had no provision for alternative lenses, which were always thin on the ground and had to be imported from France. The most common alternatives were the 2 cm. f/1,9 focusing standard lens (of rather wider angle than the viewfinder field) and 50mm f/3,5 telephoto, both from Berthiot and of good performance. As the front viewfinder element is easily accessed by removing three screws from the camera nameplate, the fitting of a transparent celluloid mask with cut-out for the telephoto field does not present great difficulty. Wide-angle lenses could not be offered in this mount, other than the Berthiot Hypercinor x0,5 afocal attachment. Variable motor speeds over the range from 10 to 32 f.p.s. could be fitted to special order, the control knob being located on the front of the camera.

Towards the end of 1936 the doyen of all 9,5mm ciné cameras first appeared on the British market in the form of the Paillard-Bolex H9, which externally was identical with the H16 model also priced at £55. This design, deservedly celebrated and still manufactured for 16mm, contained an autothread



mechanism for 50 or 100ft. spools and featured a triple turret with tri-focal viewfinder for 15, 25 and 75mm lenses (50mm to order). The viewfinder could be detached for use as a director's viewfinder, mounted on the top of the camera for hand holding or mounted on the camera door alongside the lens in which position a parallax compensator could be used for precise alignment. When the finder was door-mounted a critical focusing lens and eye-cup could be screwed into position above the top lens. The 9,5mm gate aperture plate is totally unrelieved and flat but is chromium plated. As with 16mm, drive was by a single claw working on the base side of the film. When France fell, production of the H9 ceased and was never resumed. Consequently the many detailed improvements to this design from the frame counter onward are not to be found on the H9 examples that survive, although a number are quite easily fitted or adapted. One such is the eye level reflex focusser originally designed by F. A. Sandell for R. G. Lewis Ltd., which however restricts the viewfinder to the door mounted position. Another is the turret handle. Yet another, the flat base adapter with matte box holder. And so on.



In 1956 Bolex introduced a reflex viewing version of the H16, which in effect was made as a bolt-on attachment. The writer found it possible to substitute this for the original front panel of his H9 in less than two hours working on the kitchen table with only assorted screwdrivers. Finding the H9 is the hard part, as so many reflex H16 bodies were sold and are now unwanted that it is not difficult to find one cheaply today which may be malfunctioning in some respect unrelated to the desired reflex viewing system. This modification of course includes the most desirable filter slot and allows of fitting a zoom lens. In the early 1970s Sony commissioned four different Japanese lens manufacturers to produce a lightweight zoom lens to their specification for an early video camera with 'C'

lens mount. It was to have a 6 : 1 zoom ratio from 12,5 to 75mm, a maximum aperture of f/1,8 and a totally closing iris. One of these lenses provides the ideal complement for the above reflex conversion, as the totally closing iris enables fades and dissolves to be made in the absence of a variable shutter and 9,5mm only uses the centre of the field, which in fact covers the 16mm frame also. Used examples of this lens have been found in ex-Govt. surplus stores priced as low as £15 and they only cost about £60 when new. They perform well.

It goes without saying that a Bolex H9 as originally equipped will still provide stunning results. As Swiss lenses were not made at that time it was common for the local distributor to mount a set of premium optics from leading local manufacturers. In France they came from Berthiot, in America Goerz, in Germany Schneider or Hugo Meyer and in Britain from Dallmeyer or Hugo Meyer. Early illustrations of the camera used widely in advertising incorrectly showed it to be equipped with a 3 inch telephoto and two 15mm lenses by Dr. Hugo Meyer, who perhaps had been unable to deliver his superb 25mm f/1,5 Primoplan in time for the photo session.

Assuming a certain level of competence, the pleasure to be derived from viewing the first roll of colour shot with one of these cameras takes some beating.

Naturally the operator of any of the cameras mentioned is expected to have the ability to focus a manually focusing lens, if he is lucky enough to have one on the camera, and to judge and set the appropriate exposure using the iris diaphragm. Mistakes in these departments are so costly that the user with the patience to perfect his technique will soon find his way by experience, but the use of a photo-electric exposure meter is strongly recommended in view of the erratic lighting conditions normally encountered in Britain. Due to the limitations on the medium imposed by available film speeds and possible exposure range, there is little point in investing in an expensive CdS instrument capable of giving a reading off a cat in the proverbial coal-cellar. A selenium meter is entirely sufficient for ciné applications and has the virtue of being self-powered for life.



Excellent examples of this type can now be found for a few pounds in most camera stores dealing in used apparatus. It is well known that to obtain the most accurate and consistent exposure of skin tones with the unforgiving colour reversal emulsions used by cinematographers, the 'incident light' method of measurement advocated pre-War by P. C. Smethurst gives the most consistent results. Because this measurement has to be made by pointing the meter at the camera from the position of the subject, it goes without saying that this method is unavailable to those cinematographers whose meter is built into the camera itself, a handicap which need not concern users of 9,5mm cameras as hardly any incorporated meters.

The serious cinematographer will consider a sturdy tripod, surmounted if possible by a 'fluid' pan-and-tilt head, is an essential prerequisite to get the best results from these or any other ciné cameras. These do not come cheap, but if you have one the hand-cranked Baby remains a usable camera!



This 9,5mm Eumig C2 camera from 1935 was the world's first camera to incorporate a photo-electric exposure meter but unfortunately was never officially imported into Britain. Photograph by Helge Thelander

CHAPTER THREE

The Post-War Scene (1945 - 1999)

The Bolex H9 may have died during the war, but when it was finally over the French camera industry was soon back on its feet. Almost immediately French Pathé were approached by a Swiss camera designer, Jean Wesbrodt, with a prototype which appealed to the firm, so he was engaged. The head of camera production was Robert Boyer and the results of their collaboration were known as Webo cameras, which began to appear in 1946 for the French market.



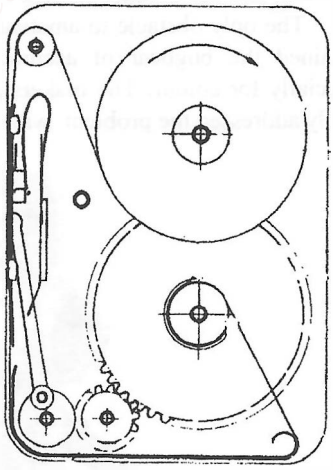
Their simplest design was the Webo A, which was to continue in production virtually unchanged until 1970. It was very much in the "you press the button and we do the rest" tradition beloved by Kodak, but of course before the days of electronic automation. Examining it externally, one side of the camera features a clockwork motor winding key (non-ratchet) and the other a door catch, and that's it. Underneath is a a-inch Whitworth tripod bush. The front of the camera reveals the usual optical viewfinder covering the field of a 20mm lens and fitted with an amber gel with cut-out for the field of a 50mm telephoto. Further down is the lens in a special quick change mount. A slot in the lens mount was aligned with and slid down a small post while a catch on the front of the camera was pulled away; when the lens was home this catch was released to hold it in place. Only three lenses were offered in this mount, all with four elements. The basic lens was a 2cm f/3,5 fixed focus type, but there was a 2cm f/1,9 focusing alternative and there was a 5cm f/3,5 telephoto, all presumably from the S.O.M. Berthiot factory. Near the bottom of the front plate is the motor release in a

protected slot, giving single frames when pushed upward or continuous run if pushed down, all the way down giving locked on running. Finally at the bottom is a fixed stud matched by one on the rear to retain the leather carrying strap whose length could be adjusted by a buckle in the middle.

The shutter is of an unusual oscillating type in which an open frame vertically traverses the gate aperture, first from above then from below for each alternate frame. This gives an even exposure of 1/50 second per frame (requiring the 'B' camera setting on Weston Ciné Meters) or 1/25 in single frame mode. The motor speed is regulated at the standard 16 f.p.s. and one wind of the spring yields a run of approximately 45 seconds.

Opening the camera door reveals a large rectangular cavity for reception of the Webo magazine. There is a chrome plated spring which will engage the metre counter when a magazine is loaded and at bottom left a small, circular well housing a disc drive with spigot to mate with the magazine. Inside the magazine the matching disc drives a long claw member pivoted to its periphery. It also carries a gear which, through a small intermediate gear, drives the geared circumference of the take-up plate. The entire tensioned gate is within the magazine, but because there is no sprocket, darkroom loading is not as awkward as with Kodak 16mm magazines. The film load is nominally 50ft, though when magazines were on sale they were only loaded with 14 metres (45,5 feet). However, home loaders of today will find splitting a 100ft roll will fill two magazines without wastage. The supply bobbin is wound with film emulsion in, but take-up is emulsion out.





The simple threading path of the Webo magazine

The amateur using this system was relieved of any maintenance beyond keeping the lens clean in the days when film was sold in magazines. But nowadays if one has such a camera its usefulness will depend on the number of magazines one has been able to collect and maintenance duties must also extend to each of those magazines. At one international 9,5mm festival held in England recently I saw Mr. Bernard Trembloy, President of Ciné Club 9,5mm de France, collecting a batch of these magazines from a dealer, so perhaps they are more plentiful here than in their country of origin. When I learned back in 1973 that Webo magazines of Kodachrome were to be withdrawn, I took my Webo A with three unused magazines of this material to Paris and sold them for a good price to a dealer on Bld. St. Martin, but I have since bought another.

The example shown on page 40 has been "improved" in various ways. Most notably the special lens mount has been substituted by the standard 'C' mount in a conversion carried out by the redoubtable John Cunningham some years ago. The viewfinder has also been modified. As I have used reading glasses for over a decade, I often find that these simple cameras whose finders consist of a positive and negative lens yield a less than sharp image today. In the Webo A this problem was compounded by the metre counter. This is displayed above the viewed field in a small mirror reflecting a reading from a roller inside the camera on which reversed numerals from 1 to 17 are carried. This roller is only illuminated by stray light entering the front lens of the viewfinder, so there are times when it is quite invisible. It advances at quarter metre steps. Obviously there is a difference in distance between the front negative lens and the roller via the mirror, so if eyesight is a problem the numerals can appear fuzzy if visible at all. In my case this difficulty was simply cured by fitting an additional positive lens from another defunct camera over the existing one.

The only obstacle to amateurs using this system getting viewable movies remained the bugbear of accuracy of exposure required for reversal film, especially for colour. The makers recognised this and after about fifteen years finally addressed the problem with a model redesignated as the Webo Rio Phot,



which featured a selenium meter behind the lens and indicator needle visible in the viewfinder. I have mounted an accessory shoe on the Webo A to accommodate a Kodalux L meter normally carried on my Bolex H cameras. I have also added a pivoted plastic 0,5x adapter made by Eumig to the front of the viewfinder to show the field of a 10mm Berthiot wide angle lens, as illustrated. This has the effect of converting the 50mm viewfinder cut-out into a finder for a F25mm lens, which is extremely useful with the C mount.

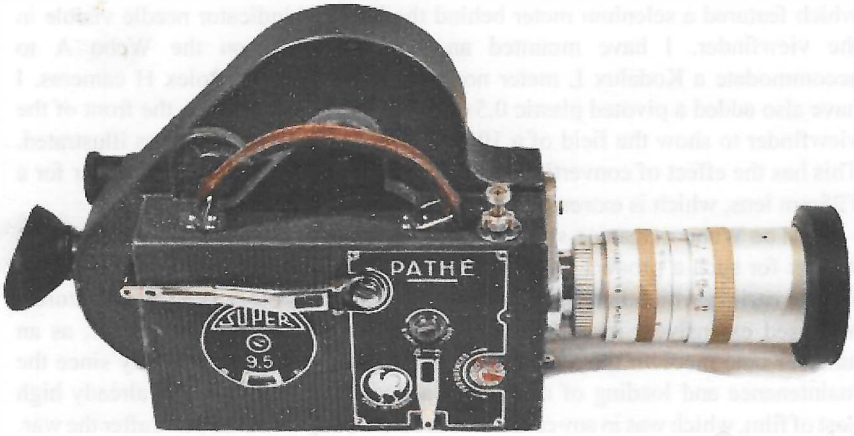
The Webo magazine system looks like an attempt by Pathé to tap into the market for such a product already established by Eastman Kodak in America a decade earlier, which had been followed by numerous other U.S. manufacturers and used extensively in military applications during the war. However, as an amateur ciné medium the 50ft magazine format was a definite luxury since the maintenance and loading of magazines added considerably to the already high cost of film, which was in any case a scarce commodity for some years after the war.

My chief reservation with the system arises from a regrettable inaccuracy I have encountered (even in the days of buying Kodachrome magazines) in the location of the gate aperture plate in the magazine, which is spot welded in position. When correct it should not be possible to see a perforation on viewing the magazine exterior with film loaded.

Although the Webo A had a long production run, no other cameras were made for its magazine. It was marketed in Britain by Pathéscope Ltd. and cost £37.53 with f/3,5 lens or £52.12 with f/1,9 lens at a time when the popular H Motocamera cost £27.80 and the National II with f/1,9 lens cost £58.39. The camera measures 13,5 x 11 x 4cm and weighs only 1kg complete with loaded magazine, appreciably less than the Pathéscope Prince. This seems to have been achieved by a narrower spring casing and by clever design of the alloy body castings, which except for the substantial lens panel are unusually thin but strengthened by overall external ribbing. The wrinkle paint finish is in chestnut brown. In the mid-1950s the castings were redesigned to soften the edges of the original sharp profile. The first variation had only six horizontal ribs on the winding key side and was in a champagne colour and the second had eight ribs with grey paint finish.

From today's perspective, while all the 16mm models have been rendered obsolete by the withdrawal of suitable colour reversal film, those who are prepared to load and unload their own Webo magazines in the darkroom have a plentiful supply of colour emulsions available and will find the camera quite handy for the great majority of home movie subjects, even with the original lens equipment.

1946 also saw the launch of the more impressive Webo M, which was to remain in production in one form or another until 1981. It was a most ambitious design and offered reflex viewing ten years before the Bolex. This was achieved by the use of a very thin and fragile coated glass pellicle, mounted at an angle



immediately behind the lens aperture, which diverted a small portion of the light on to a ground glass screen for magnification by the reflex viewfinder. However the image was rather dim even at full aperture, so a normal Galilean finder was also incorporated for the 25mm lens with engraved reticle for a 75mm lens. The camera featured a triple turret for 'C' mount lenses but the screw mounts were very shallow as a result of the space taken by the pellicle immediately behind. The three mounts were also rather close together and it was not until the 1960s that Pierre Angénieux was able to provide a set of optics of retrofocus design which permitted both wide-angle and telephoto to be fitted. Before that the lenses came from Berthiot. The camera had many desirable features including a long spring wind, speeds from 8 to 80 f.p.s., variable shutter, backwind and frame counter. It took spools up to 100ft and featured a large sprocket wheel with sprung edge guides on to which the film was pulled when loading. The chrome gate aperture plate was relieved over the picture area and the intermittent drive was by a single claw working through the base of the film like the Bolex.

The camera body weighed 2,4 kg and measured 20 x 16,5 x 8,5 cm. The film counter operated from a feeler arm resting on the feed spool, rather a poor feature for this class of camera. It featured a leather carrying handle above the motor instead of the film chamber where it should have been. In fact it was not ergonomic from a hand-holding standpoint in the least, because the motor release plunger, which could be set to give single frame, time exposure, continuous or intermittent run, was located on the top of the mechanism section of the body near the front turret. A pistol grip was made available but this operated through a long external link running up the side of the camera and screwed into the cable release socket, most ungainly. The body finish was in a grey wrinkle paint most commonly, although a dark gold or bronze colour was also used.

It has to be admitted that this camera, clearly intended for tripod mounting, did not enjoy the reputation for unerring reliability of the Bolex, though the

16mm version sold well in America. Both versions were imported by Pathéscope Ltd., when conditions permitted, but demand from their penurious 9,5mm customer base would have been very small indeed.

The camera was greatly improved in 1964 with a model known as the AT-BTL (auto-threading, behind-the-lens metering). The finish changed to a glossy mottled grey. The battery for the CdS meter was switched on by a rubber piston pressing against the forehead when one's eye was to the finder. A removable plate atop the film chamber allowed the fitting of a 400ft. film magazine. But there were two vital unsung improvements. The reflex viewing image brightness was hugely increased with just a central ground glass spot for focusing, so that one could observe the meter needle and fixed pointer. Also the pistol grip was arranged to operate through the camera base. The leather carrying handle was replaced by a chrome plated metal bar handle. This was probably the best specified 9,5mm camera ever offered and was a far more ergonomic package than the Webo M, but by the time it appeared Pathéscope Ltd. had gone to the wall and the agency passed to Apparatus & Instrument Co., who had no reason to import the 9,5mm version.

In 1950 Pathé decided to do something for the poor charger user and re-designed the National camera (their name for the Pathéscope H). The Pathé National II was imported and marketed by Pathéscope Ltd., but it cost more than twice as much as the H so was none too popular. It was always possible to order the Pathéscope H with variable motor speeds and a viewfinder with parallax compensation at extra cost, though few did so. The National II incorporated these features as standard and on the surface seemed to resemble the H, though with superior finish. But the improvements went further. The motor release, providing



for locked off, single frame and continuous run was moved to the front of the camera and was threaded for a cable release of the Compur pattern. The metre counter was auto-resetting and moved at intervals of an eighth of a metre (virtually continuously) up to 9 metres, behind a celluloid window (almost unique on Pathé hand cameras). The motor release, speed control knob, inching knob and viewfinder eyepiece were handsomely finished in satin chrome. The winding key was streamlined to lie flat against the case. In France the camera was offered with either f/3,5 fixed focus or f/1,9 focusing Berthiot 2cm bloomed lens in Pathé screw mount, though Pathéscope seem only to have imported the f/1,9 version. The viewfinder front element was fitted with an amber mask with cut-out for the field of the 5cm Berthiot telephoto. A hinged internal wide-angle adapter lens was also fitted, brought into view by a knob or lever on the side of the camera, to show the field of the Berthiot Hypercinor wide-angle attachment (x 0,5) which could be screwed into the 19mm. ø filter thread of the f/1,9 lens. This is badly designed in that the converter obscures about a third of the viewfinder image. There were two more major changes, one excellent and the other disastrous. The gate, which closely resembled that of the H had the pressure pad mounted on a pivoted arm as in the original Motocamera, essential really if one is to carry out a rapid and thorough examination of the gate channel and aperture at each charger loading. Full marks for that one. But a Norwegian nul point for the replacement of the excellent carrying strap of the H and earlier cameras with a dreadful leather loop screwed to the centre of the top of the casing. Just what is one supposed to do with this? An execrable alteration, enough by itself to deter most British purchasers, surely.

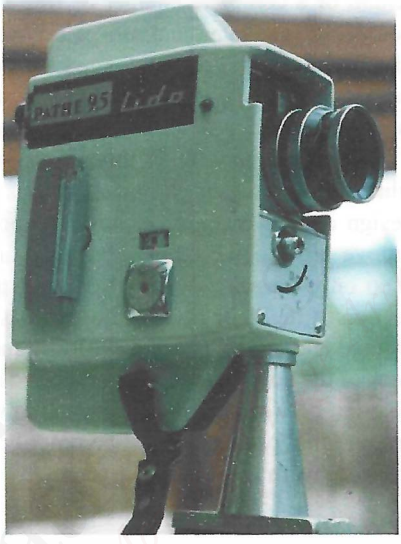
Production of the National II seems to have continued until 1958, but it was not to be the last charger loading design to be offered on the British market. The next year Pathéscope (Great Britain) Ltd. were to introduce the Pathéscope Prince, of which more anon.

Meanwhile the French company had moved on to better things and in 1958 began the manufacture of the beautiful Lido camera, which was in production for only about six years. This stylish and most ergonomic of cameras was produced in so many versions that it is a wonder it worked at all. Initially it seems to have been designed to expose both "Classic" 9,5mm format and also when held horizontally the ill-fated Duplex double run twin perforated film, which was not available for long. But versions were also made for 50ft. spools of double-8mm (also a rarity) and 16mm (likewise since the 1960s). Fortunately most examples found today are for Classic 9,5mm, the sole survivor. The 50ft spool is ideally suited to most amateur needs and remains readily available in 9,5mm loadings.

Ignoring for the present purposes the "Universal" model designed to be used with both Classic and Duplex perforated films, the Lido for standard 9,5mm was made in two versions, the Lido I and Lido IV.

The Lido I is a straightforward single speed (16 f.p.s.) camera, lacking most refinements but nonetheless entirely serviceable. It features a standard 'C' lens mount and a viewfinder for a F25mm lens with an engraved reticle showing the field of a 50mm telephoto. Inexplicably these cameras were often supplied with a Berthiot lens of 20mm focal length, which is unsuitable.



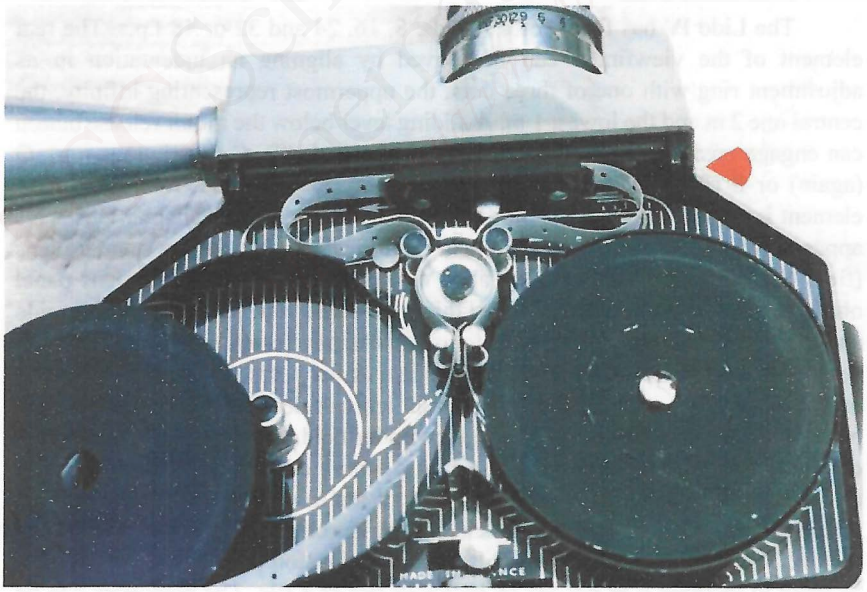


The Lido IV has four motor speeds: 8, 16, 24 and 32 or 48 f.p.s. The rear element of the viewfinder can be moved by aligning an indentation in its adjustment ring with one of three dots, the uppermost representing infinity, the central one 2 m and the lowest 1 m. A sliding lever below the motor release button can engage positions for I (single frame), O (locked off), C (continuous run), O (again) or P (Pose, which we call Time exposure). Near the front viewfinder element is a small knob on the hinge of an internal wide-angle adapter lens. This appears to be for the Berthiot Hyper Cinor x 0,5 attachment for the standard lens (field 12,5mm). Unfortunately the alloy casing which overhangs the lens panel obscures about a quarter of the field of this wide-angle viewfinder on the right side and must be filed away if one wants to use this feature (see illustration). As on all Pathé small cameras the front viewfinder lens is very close to the lens mount to minimise parallax error. This means that all lenses selected for this camera must be checked for non-obstruction of the viewfinder field. A prime 12,5mm lens will obstruct most of the view, but most 15mm lenses can be accommodated. The aforementioned casing overhang can obstruct the mounting of some larger 'C' mount lenses and it is important to check that lenses are fully seated against the mount. The cutaway section was enlarged as production progressed, but it is not difficult to increase it as needed by judicious use of a file. The paintwork can be retouched after this using Humbrol Enamel No. 147 from a model shop.

On both cameras the motor release button can be depressed and turned clockwise to achieve locked-on running and is threaded for a Compur type cable release, so an Autoknips delayed action timer can be used, or a so-called 'soft release' button.

The tried and trusted clockwork motor which used to run for more than the length of a complete charger of film comes into its own on the Lido. The film counter is graduated and moves forward at intervals of a quarter of a metre and allows for running off the fogged leader before registering '0'. The dial, which is unprotected by a window, commonly attracts grease from the mechanism, which can be removed with a cotton bud dipped in white spirit.

Without any doubt the most common grumble with the Lido arises from film fogging, which can have various causes. In part this is certainly due to a design defect. Whereas most other spool loading cameras rely on a tongue and groove protection against light leaks around the rim of the removable door, the Lido only uses this system for about three-quarters of its periphery. The front section of the door nearest the lens has a long flat tongue that must be correctly aligned and then pushed very firmly into a slot behind the lens panel before the back of the door is lowered and pressed into position and screwed home. It is at the junction between the two light sealing systems (front flap and peripheral rim and groove) that problems most commonly occur as the black flocking and felt light traps are worn away over the years.



No less than three designs for holding the lid in place were tried during the production run. The first and least successful had a sliding latch operated by a serrated thumbwheel. So doubtful were Pathé about the efficacy of this arrangement that elaborate (but flimsy) black felt light barriers were fitted above and below the gate in an effort to protect the loops from fogging. The second and more successful pattern had the back of the door fitted with a thumbscrew and the corners of the long front tongue were given black rubber wedges to counter wear in this vulnerable area; the black felt loop protectors were dropped. The third and final solution had the thumbscrew permanently attached to the body rather than the door; a slot in the back of the lid with a countersink at the top ensured that when the screw was tightened the door rim was correctly and firmly depressed.

As if the door fixing was not fiddly enough, one must also ensure that the leather wrist strap permanently attached to both body and lid has not become twisted during this operation.

One must examine a fogged film to determine with accuracy the cause of light leaks. If there is fogging at the start of a shot, as is most common, the upper loop is being struck by sky light while the film was stationary and the problem can usually be cured by adding a small strip of black felt to the top of the body above the gate panel where it meets the lid. Sometimes this strip has worn down or come off completely. Another type of localised fogging can be caused by light entering the claw slot, probably as a result of the front panel being removed by a previous owner, perhaps to clean the inside of the viewfinder, and not replaced with proper respect for the light trapping beneath it.

On removing the lid for loading one must slide a chrome button by the door latch downwards toward the take-up, which resets the film counter and releases gate tension for threading or removal. Space inside the camera is decidedly cramped, not helped by the spool guards fitted in an effort to minimise the effects of fogging through the central perforations. One needs quite small fingers to be able to grasp the two small tags projecting from the black part of the pressure plate to prise it out of the camera, but this is unfortunately a necessity if one is to keep the gate channel and its vital aperture clean and free from hairs. The gate aperture plate has raised edge guides which do not encroach on the picture area and an unrelieved pressure plate. However, as a legacy from its Duplex past, the aperture plate also has a central runner like some double-8mm cameras and clearly any deformation of this runner could produce a bad central scratch in the emulsion. And the Lido claw is narrow and off centre, another legacy from Duplex. Roughness around the apertures for the claw in the front or rear plates may produce scratches. Such defects, however, can occur with any ciné camera. The gate must always be meticulously inspected and kept clean. But the pressure plate of the Lido has to be removed and replaced with some care if scarring of the central runner is to be avoided. Any roughness is likely to reveal itself by a powdery deposit and must be appropriately dealt with.

The loop pattern illustrated on the mechanism plate seems to have been designed before the spool guards were fitted and if followed would result in the loops rubbing those guards, which could conceivably produce scratching, though the guards are quite smooth. Consequently semi-circles have been painted on the plate to indicate the size of preferred smaller loops to avoid this possibility.

The pressure plate has simply to be lifted upwards for removal and when correctly centred on the chrome stud which closes the gate will clip back in place with downward pressure. Before the lid can be replaced the chrome button near the door latch must be slid upward again in the direction of the arrow. At this stage run a few inches of film to check that threading, carried out with the gate tension off, is satisfactory and loops are maintained.

There is no denying that loading this camera is more fiddly and time consuming than most. Even attaching a film end to a 9,5mm spool can be trying compared to a 16mm one, though 100ft is worse still.

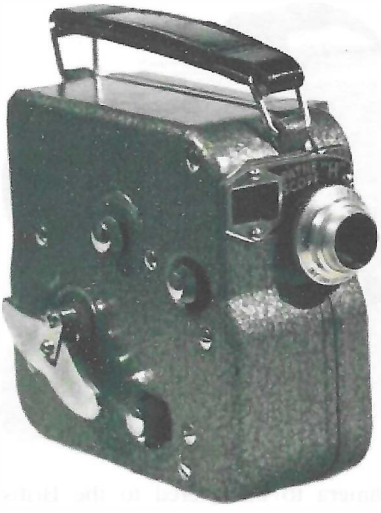
When the lid is replaced in the manner already described, the back of the camera should appear to be one solid piece of metal that changes from grey to black where the door joins the body. Any overlapping metal indicates misalignment and probable fogging.

Externally there are only two further parts calling for description. The first, and another problem if you intend using it, is the tripod bush below the lens panel, which has a Continental ⅜-inch Whitworth thread and also carries the impressed serial number. This poses a problem in failing to allow space for the camera platform found atop most pan-and-tilt heads. One dealer years ago would supply a conical converter with Continental screw and a ¼-inch Whitworth thread in the base to overcome this problem. Quite often the tripod bush will be found to be loose, which could indicate that the camera has been taken apart. It is held by two screws, one secured to each of the two main alloy castings of the body. These fixing screws have to be inserted last on assembly of the body and they are difficult to access without a proper tool.

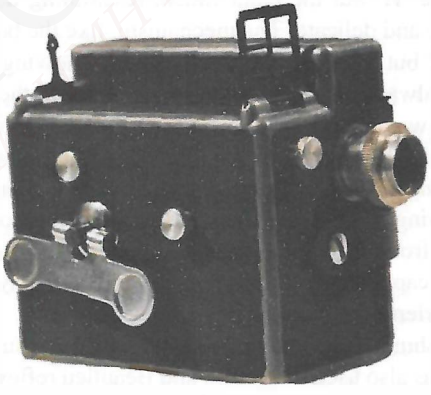
Finally there is the very stylish non-ratchet motor winding key which has a lot to do with the modern appearance of the Lido, yet is quite functional. Most were finished in bright chrome but later examples were in satin chrome. They carry the same thread as winding keys for earlier Pathé and Pathéscope cameras.

Concentration here on possible pitfalls is intended as helpful guidance and is certainly not designed to discourage any potential purchaser or user. In fact this camera of unusual and modern design combines an economical 50ft spool load with superb handling and portability (it weighs 1,45 kg). With a top quality lens it will deliver stunning movies.

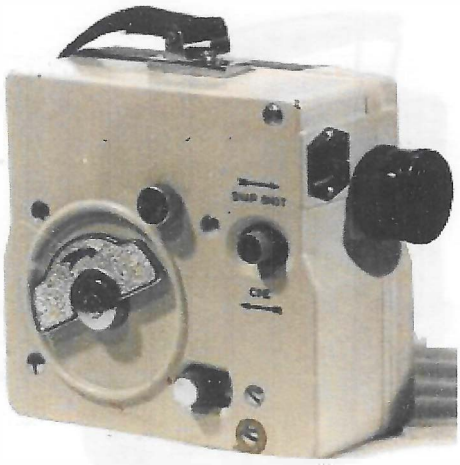
When Pathé sold out to Eastman in 1970 the entire stock of parts for the Lido was acquired by Photo-Ciné Muller, still trading at 17 rue des Plantes, F-75014 Paris (Tel: 00 331 4540 9365). When I last visited the store I bought a Lido winding key for £9 and they were even prepared at that time to build an entire camera to order.



Back in Britain, Pathéscope Ltd. resumed production of the Motocamera H after the war, though it took some years for supply to approach demand as so-called luxury goods of this kind had to be exported in an effort to replenish the nation's exhausted coffers. In the mid-1950s this camera acquired a new mottled silver-grey paint finish and its black N.O.C. lens, which always performed well, appeared in an aluminium body with coated lens surfaces. Although it was the cheapest ciné camera available for any gauge at £27, Pathéscope seemed to conclude that a camera half this price would revive its fortunes and manufactured the miserable Pat, probably the poorest ever offering from a "reputable manufacturer" and not worth the time of day. Among its worst features were a doublet 25mm lens with just two Waterhouse stops and a viewfinder which had difficulty in standing up showing the field of a 50mm lens. This was launched in 1953 with some ballyhoo but after three years was no longer mentioned.



The miserable "Pat"



The last 9,5mm camera to be offered to the British public was the Pathéscope Prince, which appeared in 1959 along with the Princess projector, a machine of such low power and primitive conception that the marketing strategy adopted laid all emphasis on its ability to show still frames without damage.

Only the previous year Pathéscope Ltd. had broken away from its French parent Company and re-formed as Pathéscope (Great Britain) Ltd. with the avowed object of increasing home based production. Accordingly the Prince camera, though closely resembling its predecessor the Pathéscope H, was claimed by Pathéscope to be an entirely English production, both optically and mechanically. It was manufactured at Smiths' watch factory in Cheltenham, where only seven years earlier I had bought and exposed my first 9,5mm Gevapan films.

The body castings were produced by diecasting using passivated Mazac zinc alloy and as they have now lasted forty years without disintegration it must be presumed that the passivation process was a success. The lines are cleaner and more detailed than the 'H' but the paint finish, resembling that of the Lido, is much more vulnerable and delicate. The mechanism, like the body shape, closely follows that of the 'H' but there are subtle differences showing it to be a copy of the French original always used by Pathéscope Ltd. in the past. The chief alternatives to the pre-war 'H' design consist in a more streamlined winding key, a welcome return to the Motocamera principle of a fully opening gate and the most unfortunate fitting of a wrist loop of black nylon material in lieu of the conventional top carrying handle employed for all previous Motocameras. These features are all copied from the National II design, though different parts are used. The tripod bushing is capped by a feeble dust cover, ostensibly an improvement on the 'H', but an overlength tripod screw would soon shift it.

The guillotine shutter from the original Motocamera survives through to this last design, and was also used in Ercsam and Beaulieu reflex 9,5mm cameras.

This supposedly gives less exposure to the top of the frame, a defect which Pathéscope Ltd. used to claim had the beneficial effect of giving desirable lesser exposure to sky areas. In practice the effect of uneven exposure is not noticeable with images of varying density, although it may be detectable in some situations, such as titles using a light background.

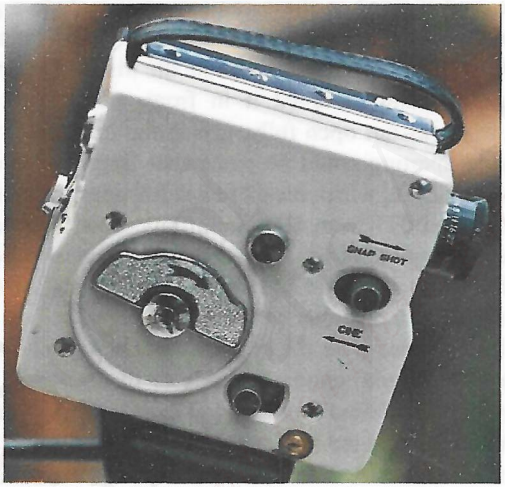
The Prince has the same interchangeable Pathé screw lens mount as its predecessor, but the viewfinder does not show the field of alternative lenses. Coated National Optical Co. f/1,9 fixed focus and focusing lenses were available for the camera at considerable extra cost but most examples will be found to have a Colotar or Japanese Kaydon f/2,8 fixed focus lens inscribed "27°" referring to horizontal coverage. The N.O.C. lenses were usually marked as having F23mm focal length. Lenses of French manufacture had the classic F20mm wider acceptance angle, and if fitted to these cameras will include a greater area than shown in the finder. The Japanese manufacturer of the f/2,8 lenses seems to have found it impossible (at the price) to incorporate the iris diaphragm within the very deep-seated lens itself and mounted it in front, which is a bizarre feature. Furthermore the iris does not open fully, giving the impression that if it did the maximum available aperture could be somewhat larger. The lens was set at a hyperfocal distance of 15 ft., which meant that at full aperture it gave sharp images from 8ft. to 30ft., and at f/11 from 4½ft. to infinity. The standard push-on 16mm supplementary lenses would not fit this new lens, but focusing could be achieved by unscrewing the lens in its mount and observing focus and centering in the gate with the motor run down and shutter and iris open.

Undeniably the Prince gives the impression of being not entirely finished. In particular the decal plate with exposure guide to fit the recess provided on the outside of the door is only found on the initial examples. Similarly none is fitted below the winding key, as on the National II, and the arrows on the key itself are meaningless once it is erected. The inside of the camera also has an unfinished look. But in practice Smiths' work was quite sound and the most serious criticism has to be reserved for the motor spring, which tends to be less smooth in uncoiling than its French forebears, possibly due simply to the lubricant employed.

The camera was originally priced at only £14.45 plus a Purchase tax of £3.40 with the f/2,8 lens, and this included a grey plastic pistol grip and a nylon wrist strap each fitted with ¼-in. screw for the tripod bush and a black nylon zippered carrying case with aperture for the top wrist loop. However the 9,5mm film and especially processing situation at that time was so dire that even in 1959 it was not uncommon to find dealers off-loading them at half price. In January 1966 they were advertised by a London dealer for just £4.47 plus 17p for postage and packing (weight 1,3kg).

Anyone sharing my opinion that the top wrist loop fitted to the National II and Prince cameras in lieu of the normal carrying strap is an intolerable abomination which spoils their ergonomic handling can adapt their cameras to

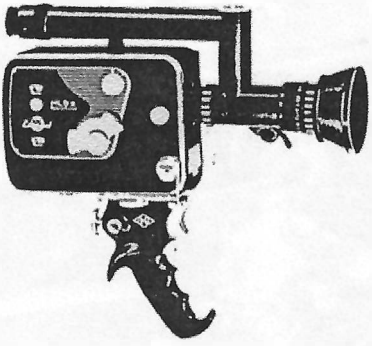
restore this desirable feature fairly easily, as shown in the accompanying illustration. The loop fixture has been replaced with a duralumin panel measuring 90 x 15 x 5mm. A channel 2mm deep and 13mm wide is cut in the underside and the top edges of the panel are finished with a 3mm radius cut for appearance and comfort. The countersunk holes of the original loop fitment are reproduced 1mm. away from the centre line of the panel lengthwise. In the case of the National II the original leather loop was cut to a length of 21cm and butted end to end in the channel where it was glued with the butt join between the two screw holes, where holes were burnt through with a pointed soldering iron. The original M2,5 screws were used to fix the handle. The screws used for the Prince loop were not long enough and alternatives 8 or 9mm long had to be found, as did suitable leather from a surplus wrist strap.



When disassembling cameras like the H and Prince, which is rather straightforward, I always take the opportunity to fix a celluloid cover over the footage counter window, though the rectification of this glaring omission may seem pernickety.

Apart from the Dekko de Luxe, which was discontinued in the early 1950s, no other British manufacturers produced 9,5mm cameras post-war. In France there were various competitors to Pathé, but they lacked British representation. One of the first French cameras imported after the war, which sold well, was the 50ft spool loading G.I.C. (a company founded by Marcel Beaulieu who began his career with Pathé), but the 9,5mm version was never brought to our shores. When Beaulieu began manufacturing under his own name in 1951 it was with a design for a 16mm camera, the M16 with single lens mount, but he produced an M9,5 version the following year and most of his 16mm designs over ensuing years were available in 9,5mm but were not imported into Britain.

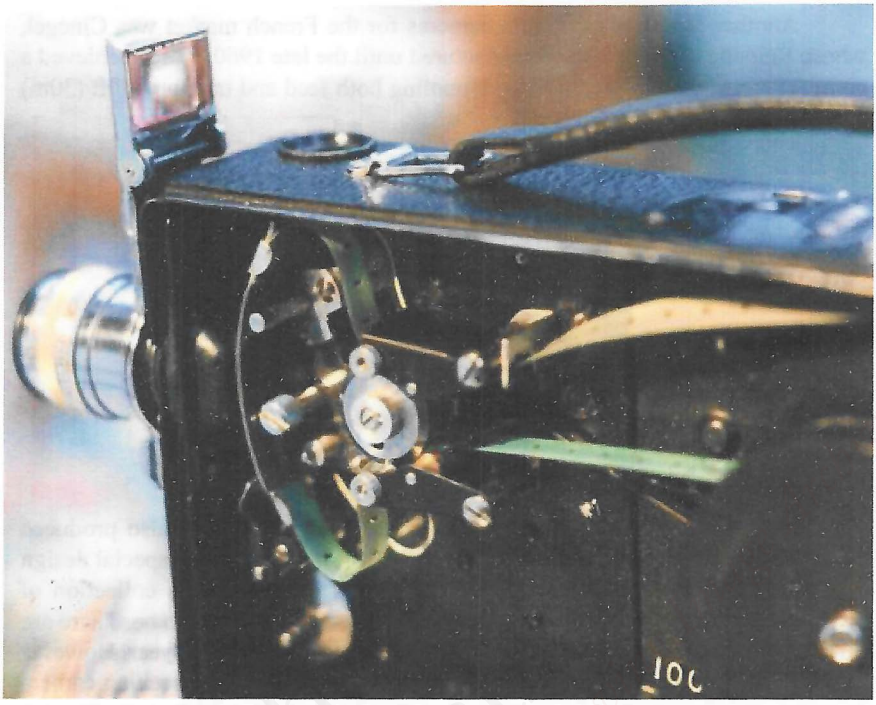
Another producer of 9,5mm cameras for the French market was Cinegel, whose Reinette cameras were manufactured until the late 1960s. They achieved a compact rectangular body shape by mounting both feed and take-up 100ft (30m) spools co-axially on a single shaft.



Robert Mascré's firm Ercsam (his name spelt backwards) also produced some handy 9,5mm cameras from 1946 until 1961, but they took a special design of charger and are therefore best avoided unless offered with a collection of chargers. Nowadays France seems a great deal closer than it used to be. There are no Customs duties and millions of British people visit France each year. However it has to be said that it is not a happy hunting ground for those seeking camera bargains, as prices tend to be much higher than in the U.K. which was always a bigger market.

Because the difference in claw pitch between 16mm and 9,5mm equipment is very small indeed (7,62mm for 16 and 7,54mm for 9,5mm) and the spool dimensions are the same except in thickness, one option that has been pursued by 9,5mm enthusiasts since camera manufacture ceased has been the conversion of 16mm cameras (and more commonly projectors) to the desired gauge. John Cunningham has carried out conversions to the Bolex H16, Ciné-Kodak Model K and Bell & Howell 70DR (his favourite) with great success. The work usually entails making a new claw member, gate and pressure pad and 8-tooth drive sprocket and obviously there are many other 16mm designs, such as the Victor, Ensign, Ciné-Kodak E or K-100 which lend themselves to such modification.

Ciné Club 9,5mm de France has always made prodigious efforts to try to ensure the continuing availability of film supplies and equipment and Paul Bigou, before his arrest, was promoting sales of the useful Russian Krasnagorsk-3 reflex camera converted to 9,5mm. However the cost of French conversions has always been astronomic. In this instance the price was around £1200 plus VAT for a camera which (for 16mm) retails at £435 including tax, or less. The conversion was carried out by Photo Ciné MS of 3 rue Charles Baudelaire in Paris, who also convert Eiki and Elmo 16mm sound projectors.



Pre-war Ciné-Kodak Model K converted to 9,5mm by John Cunningham

CHAPTER FOUR

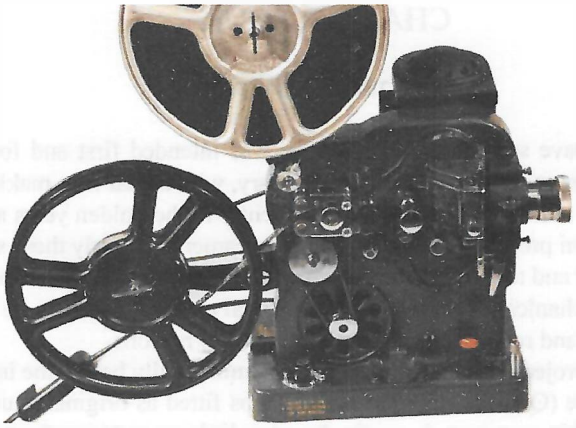
9,5mm. Projectors

As we have seen, the 9,5mm gauge was intended first and foremost for home projection and backed up by a big library, with actual film making coming up behind as a rather poor second. Consequently in the golden years many more makes of 9,5mm projector hit the market than cameras. Clearly these saw a great deal more wear and tear than cameras which only see a film once. Also projectors are electro-mechanical devices and the electrical parts are likely to be more than forty years old and requiring replacement for safety reasons.

9,5mm projector manufacture ceased commercially before the introduction of quartz iodine (QI) illuminants and the lamps fitted as original equipment are either unavailable or extremely costly. It makes little sense to use them anyway as they are far less efficient than QI lamps, which have a much longer life, generate less heat, burn at a higher colour temperature and are cheap and plentiful into the bargain. Consequently, unless QI conversion has already been carried out, one must contemplate the need for this work when buying a 9,5mm projector. The task is really quite simple and indeed part of the fun, but if you lack the confidence to undertake it yourself there are those who offer this service.

The search for a 9,5mm projector may be rather a treasure hunt, but they are not as rare as all that. For cinematography there are certain criteria that must be met but I would submit that the capacity to run at 24 f.p.s. or play 9,5mm optical sound films are certainly not among them. Above all one is seeking a machine that will run at or around 16 f.p.s. (normal camera speed) with a three bladed shutter to eliminate flicker, have at least 400ft. reel capacity and the ability to throw a large, sharp, steady image on the screen without risking damage to one's precious films. The autothread designs fitted to so many 8 and 16mm projectors after 1960, which can so easily inflict extensive film damage, were fortunately never fitted to 9,5mm machines.

The best 9,5mm projector designs all appeared first in the 1930s but some of these remained in production for a number of years after the War. The first machine to come up for consideration chronologically dates back to 1932 and was launched on the British market as the Bolex-Paillard Type P (for 9,5mm Pathé films) and Type D (dual gauge for 9,5 and 16mm). After only a year these became the Type PA and DA when Paillard added a clever Automatic declutch mechanism to stop the film whenever a notch cut in the side of the film entered the gate. Intended for 9,5mm Pathé notched titles, this device can be used in your own films. As this was the only machine to project a large picture ever made for Pathé notched titles it is inevitable that collectors of such films, and they do exist, would home in on this model. As it happens this machine is unquestionably one of the very best machines ever made for 9,5mm films.

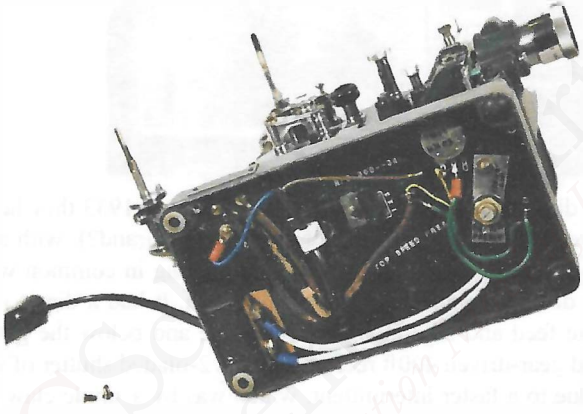


It was extremely compact and handy, being mostly built into a single solid alloy casting. The mechanism has a large number of bearings which require periodic lubrication, but it runs today as quietly and sweetly as when new, altogether a delight. The bolted on arms accommodate 400ft reels and are driven by wire belts. Apart from its still frame facility, which can be activated without notches in the film, the machine will run forwards or in reverse. The series wound motor (100v) will drive the mechanism at speeds up to 24 f.p.s. with ease. The intermittent is none too rapid in action and therefore kind to film. Lens equipment was first rate, chiefly from Hugo Meyer, though a French Hermagis 25mm wide-angle lens was available in this mount. What was earth shattering in 1932 was the lamp, a 100v 250w bulb with pre-focus cap. The large lamphouse was fitted to the side of the machine at the front using a reflected light path at a right angle to the optical axis and the mirror for this system could be hinged open to provide a pilot light for threading in the dark or for cleaning. The still picture clutch activated an additional metal gauze filter which severely cut down the light, but as the normal shutter stopped rotating this was hardly noticed on the screen. For its time, definitely a marvel. Originally it sold for £35 or less and today will fetch around £100.

So was the Bolex PA or DA beyond criticism? Not quite. The variable resistance used for controlling motor speed worked illogically (anti-clockwise for more speed) and like most such devices provided less and less resistance as it heated up. And the shutter had two blades with large opaque sectors geared to revolve only once per frame, i.e. only 32 obscurations per second, enough to give noticeable flicker with light prints or a very bright picture. In 1937 Bolex took steps to remedy this and changed the shutter gearing. These models, known as the PA37 or DA37, are recognisable by a bulge in the mechanism housing above the hinged mirror and unfortunately the new gearing increased mechanical noise and required a higher wattage (400w) prefocus lamp. Also the notched title mechanism, if one was interested, tended to stop the machine with shutter closed

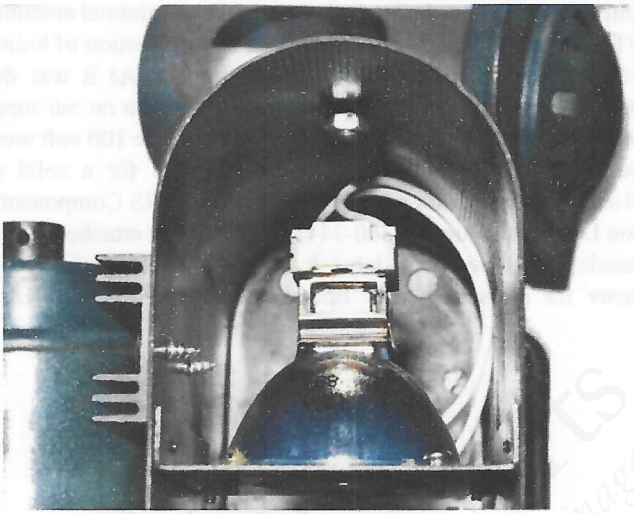
requiring use of the inching knob, a tiresome process, although notched titles were becoming obsolete already by 1937.

A plus feature of this design is that it requires a minimal amount of work to convert it for modern requirements. There can be no question of hiding a 24 volt transformer in the machine as it is far too compact. As it was designed for Continental 100 volt mains supply it always had to be run on our supply through an external transformer or resistance unit in any case. The 100 volt motor is easily taken care of by changing the motor speed control for a solid state phase controlled a.c. power regulator such as that supplied to RS Components by United Automation Ltd. (catalogue No. 300-344), which can be attached to the underside of the chassis by its heat sink tab. It is wired in series with a 220KR potentiometer for pre-setting the operating range and a 50KR or 25KR



potentiometer taking the place of the old speed control knob. The holes in the fan casing which previously cooled the wirewound rheostat may be blocked up diverting all available cooling to the lamp. The lamphouse of steel sheet is only attached to the machine by four screws and it will be found to be ideal to accommodate the EJL 24v 200w reflector bulb used in the majority of Eiki 16mm projectors and therefore commonly available. The reflector is removed from the lamphouse along with the condenser, but the panel used to hold the condenser is easily modified to accept the EJL lamp, whose ceramic 2-pin holder can also be accommodated without fouling the black baffles for the original bulb attached to the lamphouse lid. 10 Amp wiring may then be run through the base of the machine and connected to the 2-pin Continental socket to which an external 24v 8A transformer is connected, while the mains input for the motor is fed straight to the motor cable input. This involves two cables being connected to the power supply but is much simpler than fitting multi-pin connectors. The separate lamp transformer will be found convenient for use with any other machines requiring re-lamping. For example, the Eumig PIII 9,5mm machine has the same 2-pin

Continental socket. Notched titles may be screened for several minutes without heat damage from the EJL lamp in this remarkable Bolex machine.

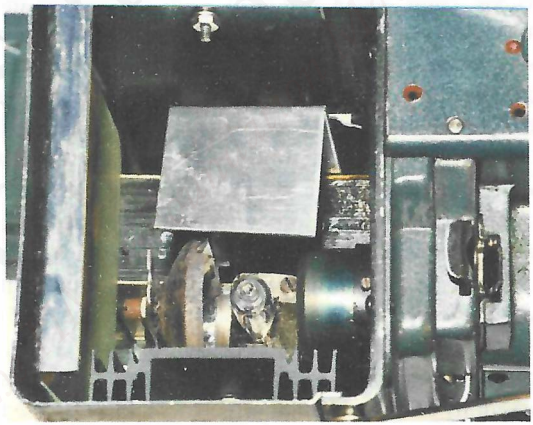


But Paillard did not rest on their laurels. In December 1933 they launched an even more powerful dual gauge projector, the G9/16 (Grand?), with a 500w prefocus bulb. Most oddly this larger machine had nothing in common with the DA except for the distinctive air-force blue paint finish. It had a direct lighting system and separate feed and take-up sprockets above and below the gate. The original version had gear-driven 400ft reel arms and a 2-bladed shutter of smaller size than the DA due to a faster intermittent, which was by a single claw poised between the 16mm horizontal pair. Later improvements were to provide a dual 9,5mm claw, 800ft geared arms (optional extra) and a unique and curious second



shutter blade to provide four obscurations per frame as an alternative to two. This was accessed by removing a small cover from the off-side of the machine, introducing a finger and hooking a nail into the notch near the corner of the second blade, normally riding behind the first, and with the aid of the inching knob dragging the second blade around the spindle to oppose the first one. Whilst this eliminated the flicker that might be evident with one blade, enabling projection as slow as 12 f.p.s. without flicker, it obviously cut brightness considerably. Like its predecessor, the G9/16 was beautifully engineered and will normally still run as sweetly and quietly as when new. Thanks to the superb optics, usually from Hugo Meyer, the screened image leaves little to be desired.

This luxury model originally sold for £45 and surprisingly does not sell for much more today. One reason for this could be that it requires more extensive work to modernise it, though this is well worth the effort. To begin with, the lamphouse is lined with deadly carcinogenic asbestos, subjected to fan cooling, and this must be replaced with an aluminium lining supported by spacers, using a face mask and disposable gloves when handling the asbestos. In essence it is necessary to remove everything concerned with the original 110v 500w lighting system from the machine except the condenser and reflector. This exercise will leave gaping holes here and there requiring blanking off panels to be fitted. There is obviously more than one way of carrying out modernisation, but when all the debris is removed the lamphouse has sufficient room to contain a transformer to feed the 100 volt motor and an A 1/216 24v 150w FCS QI lamp costing around £3.



In the example shown a standard 8mm Specto Royal was plundered for the transformer and also the motor rheostat combined with on/off switch for motor and lamp. The latter was fitted in the space vacated by the ammeter. The only control still wanted of those on the original side panel was the forward/reverse motor switch, which is mounted on a new panel. The Specto rheostat is superior to the original and functions logically (clockwise for faster) while being much

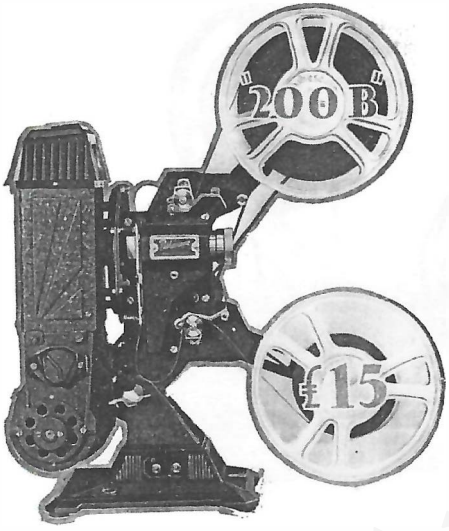
closer to the cooling fan in its new position. The final result is entirely self-contained to run off our mains supply, keeps much cooler in use and projects a whiter, brighter screen image than before.

There are various other reasons why ninefivers may prefer the PA/DA design to the G9/16. For one thing, the G9/16 projector could not handle notched titles, though it had a manual still picture device. Also the spooling arrangements were to 16mm standard and being geared could not be reversed for 9,5mm, whereas on the DA model the belts could be fitted to give the desired rotation. The gate aperture plate of the DA was sprung from the lens side and was of course detachable giving reasonable access for cleaning the fixed element. On the G9/16 the gate aperture plate was on the lamp side and sprung (the correct fashion as splices do not then upset focus) and could also be removed easily for cleaning, but the fixed element behind the lens was difficult to see or clean properly, the lens carrier being part of the alloy casting on which the mechanism was mounted. Both machines surprisingly only had non-optical framing or racking adjustment.

In December 1935 the firm launched the G3 model, which also was able to handle standard 8mm, though conversion to that gauge required much more trouble. This version sold for £52.50 and is just as useful to a ninefiver, with the same reservations.

Production of the G9/16 seems to have ceased at the same time as the H9 camera, but the G3 projector was to be re-launched after the war and continued in production until 1957. This post-war version had a smart new livery with fine light grey wrinkle paint and a beautiful satin chrome to the metal fitments previously finished in bright chrome. It also featured a 750 watt lamp in lieu of the 250 or 500 watt lamps used pre-war, and came complete with a heavy external transformer unit for our mains supply. Unfortunately the tempered steel spring surrounding the gate aperture plate on this model will usually be found to have been severely weakened by the heat from the 750 w lamp and its replacement is no job for amateurs, even if a spare could be found. The G9/16, which would probably be cheaper anyway, therefore remains a better proposition. Likewise the pre-war G3, which took a 500w bulb.

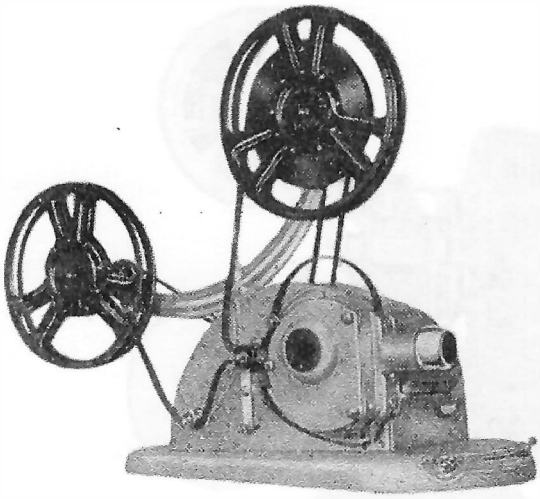
It was not to be expected that Pathéscope Ltd. would sit back and allow foreign competitors to enter the scene and steal their market and in February 1933 they announced the introduction of a new projector, the 200B. It was made for them under contract by Salford Electrical Instruments Ltd., whose other contracts included the assembly of Victor 16mm projectors and of course the famous Ilford S.E.I. Photometer. It was supplied with either 110 or 220 volt motor, but in any case would require a resistance for the 110v 200w special lamp (with T-piece) for a modern mains supply. The projector for 110v mains cost £15, but the extra resistance cost a further £2, so for most people it cost £17. Probably due to its bizarre appearance it sells for around £70 to collectors these days, but is certainly not worth that kind of money in terms of performance. Once again one is



confronted with a potentially lethal asbestos lined lamphouse, not to mention the obsolete lamp. The machine was of fairly light construction put together from an assortment of alloy and bakelite mouldings and pressed steel parts. It would not handle notched titles and had no reverse running or refinements of any kind, such as framing adjustment. The lens had a small f/3,5 aperture being of 32mm focal length and a 2-bladed shutter was fitted (100° sectors). Claims for "a brilliant screen picture 10ft wide being easily obtainable" look exaggerated today. The lens was a rather crude push fit into a steel sleeve, which does admit of a superior lens being used as the sleeve can be prised open somewhat. 900ft extension spool arms eventually became available or could still be made. However, due to its low price, this projector was a workhorse of the 1930s and it is rare to find an example that has not been well used. It has a plethora of bearings with pulleys and belts on the non-operating side and will in general be found to be a decidedly noisy contraption today, making the work of modernising the lamphouse a questionable exercise.

The cheaper bakelite bodied Pathescope H projector made for only two years before the war broke out is even less worthy of consideration.

After the war Pathéscope Ltd. finally got into production their Gem projector, whose development had been interrupted by the war. The first production models appeared in 1948 but it did not become generally available for a few years. The Pathéscope habit of spoiling the ship for a ha'porth of tar persisted, as the lens was the same as on the pre-war 200B. However it had a rapid pull-down with a 3-bladed shutter and was of sleek modern design. 900ft arms came as standard, as did a 12v 100w lamp. While this was again a tungsten T-piece special, the transformer means there is little work to do for modern use. In

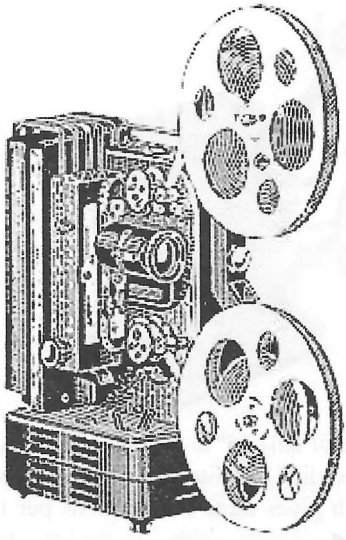


most surviving examples the original bakelite lampholder is burnt away and requires replacement and one can re-use the reflector and condenser with a QI ceramic holder. The rubber insulation on the lamp wiring will almost certainly have perished and need replacement too. The motor was bolted on resilient rubber mountings which may well also have perished and for which replacements may be unobtainable. This problem was exacerbated by the drive belt, a substantial V-belt running around the periphery of the shutter to an extension of the motor shaft at which point the diameter is too small for a satisfactory grip. The correct V-belt is almost certainly still available as such belts are used industrially the world over, but when the original belt hardened the machine often needed help in starting. Most users resorted to Hoover belts for a better grip, but this only served to increase the strain on the failing rubber mountings for the motor. If the motor is re-mounted on solid 6 BA studding there is little increase in noise, but the inching knob needs to be re-engineered to incorporate a pulley of decent diameter if the slipping belt problem is to be solved.

For the various reasons given and because many preferable alternatives exist, I am not inclined to recommend any Pathéscope projector to the present day cinematographer.

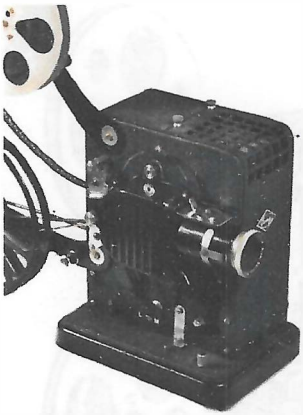
In December 1935 Actina Ltd. began importation of projectors from Eumig of Vienna, a firm that was to dominate the 8mm projector market in post-war years. The first specimen was the Super design offered at £29 in either 9,5mm or 16mm formats. This was soon followed by the PIII at half the price and available in 8mm as well.

The Super machine was of pressed steel finished in black wrinkle paint. Postwar models had a cream finish with brown lens block and fitments, but the 9,5mm version then sold for almost £70 with case and resistance and would have

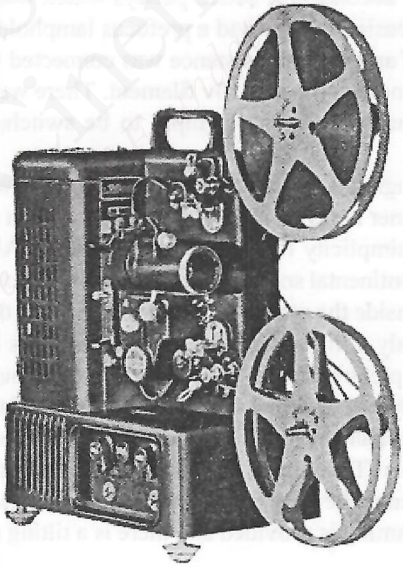


few takers. The Super was of conventional layout with a direct lighting system and feed and take-up sprockets fitted with sprung edge cheeks for easy loading above and below the removable lens carrier. All Eumig machines had the excellent Meyer Kinon Superior lenses, like Bolex. The Super offered all the refinements, forward and reverse running and stills, with optical framing. A fast pull-down was allied to a conventional 3-blade shutter. The 400ft arms could be removed by a single screw for stowage. However the off-side of the machine, rather like the 200B, abounded in belted pulleys which were inclined to become noisy with use. The basic machine had a prefocus lampholder with 250w bulb of mains voltage, but if an external resistance was connected it could take a 400 or 500w bulb with the more compact 110v filament. There was a built-in resistance (also on the PIII) enabling the motor input to be switched from 110 to 220v operation.

Strangely enough it is the much cheaper PIII model which comes across as the long distance runner today. It is a more compact design and conversion to the A1/216 QI lamp is simplicity itself. As in the Bolex PA/DA the lamp can be wired to the 2-pin Continental socket for connexion to an external 6A transformer as there is no room inside the machine to house it. It takes the same 400ft reels as the Super, though only a manual geared rewind handle is fitted. On the 9,5mm model there is a still picture device, which works well, though there is no reverse facility. There is only one external belt on the offside of the machine from the motor to the drive mechanism and this is the same as that used post-war on the P8, so is readily available. Take-up is by a conventional wire belt from the lower sprocket, which features the easy load sprung cheeks characteristic of all Eumig machines. Optical framing is provided and there is a tilting device. Unusually the



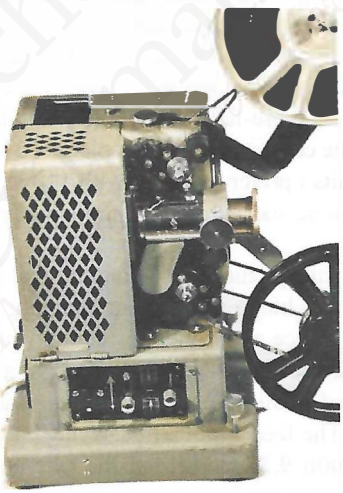
illuminant subtends an angle of only 65° to the optical axis, with the mirror being housed in a removable and stylish bakelite cover also protecting the intermittent and the barrel shutter which gives three obscurations per frame. The pressure plate is easily removed for gate cleaning, although the lens carrier cannot be taken off like that of the Super model. The machine is finished in black wrinkle paint with a smooth finish around the base and on the collapsible spool arms. Construction is delightfully simple with the mechanism between two vertical panels fixed to the base; two right-angled cover plates are each secured by just two screws on top of the machine. In view of its low price and extremely good Meyer 35mm lens, it is astonishing that this projector was not more popular, as examples are now comparatively rare.



Another contemporary Austrian projector which is a little more commonly found is the Ditmar Duo, which uniquely had film paths for two gauges permanently in situ. There were 9,5/16mm and 9,5/8mm models, not to mention the 8/16mm version. If one is only looking for a 9,5mm machine the presence of the extra gauge may seem messy, but the standard of engineering and finish were of very high quality as with their cameras. Again, although the basic finish was in textured black, some exotic and beautifully executed paint finishes were employed occasionally, resembling leopard or lizard skins.

The lighting system was the same as that for the Eumig Super and again 400ft arms were fitted. The 9,5/16mm version continued to be offered at around £80 until 1957, a long run for a pre-war design.

One of the very best 9,5mm projectors but only available from 1937 to 1939 was the dual gauge Siemens Standard Sixteen-Nine, the only machine Siemens & Halske A.G. of Berlin ever made for the 9,5mm gauge. The design had already been in production for 16mm only since 1932 and all had had a black paint finish, but the 16/9 had a grey wrinkle finish. For 9,5mm the user fitted the 9,5mm interchangeable spool holders and 8-tooth sprockets and slipped a 9,5mm aperture plate over the 16mm one. The design was most ingenious and many features were to be copied by other manufacturers in ensuing years. The 100v series wound motor lay vertically in the base of the machine driving a substantial cooling fan and a disc at its upper extremity. The motor ran at full speed for maximum cooling, which made the machine rather noisy especially as it was



constructed from steel pressings. The drive was transmitted from the disc to a wheel which could traverse its surface providing forward and reverse running and a constant speed in any given position. The most notable of the many ground breaking features of the design was its Beta style intermittent in lieu of the common claw. This consisted of a fibre-filled plastic shoe riding on the film

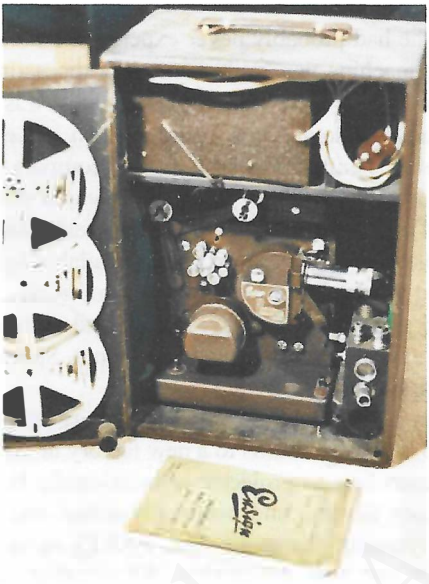


between the bottom of the gate and the take-up sprocket, which imparted a downward push on the film in synchronism with the interchangeable 2- or 3-blade shutters. The Beta shoe was relieved over the picture area and contained on this model a registering protrusion rather like the tooth of a sprocket wheel for each gauge of film, since the 9,5mm film could lie between the borders of the 16mm frame. The design worked well and was kind to film. It could easily transport films suffering from perforation damage. However the extra thickness of a splice always caused the image on the screen to dip momentarily.

The lamp used had a pre-focus base and was a 50v 200 or 250w type. A plug-in dual (lamp and motor) resistance unit was fitted next to the lamp to suit the supply current and similarly subjected to forced air cooling, with mica being used instead of asbestos for heat insulation. To modernise the machine it is only really necessary to remove the pre-focus lampholder and fit a ceramic holder for the 2-pin A1/216 bulb at the correct height in its place. To keep the heat within the machine to reasonable limits I prefer to feed it with 110v via an auto transformer, so the motor resistance can be shorted out and the lamp resistance does not have too much to do.

The Siemens has a still picture device and optical framing and the entire lens carrier was pivoted on a hinge at the front enabling it to be depressed and opened wide for cleaning. Once again the lens equipment came from Dr. Hugo Meyer and employed wide apertures. A MES pilot light as used on the post-war Siemens projectors is fitted within the base of the machine and will usually be found to require renewal. The feed spool arm/carrying handle was always able to take an 800ft 16mm or 900ft 9,5mm reel but the take-up was limited to 400ft. unless one obtained a special extension piece from the importers, though it would not be an engineering challenge to produce one now.

A few weeks before war was declared the British firm Ensign, which had previously only produced 16mm cameras and projectors, announced the introduction of their new Universal projector for 8, 9,5 and 16mm. As the

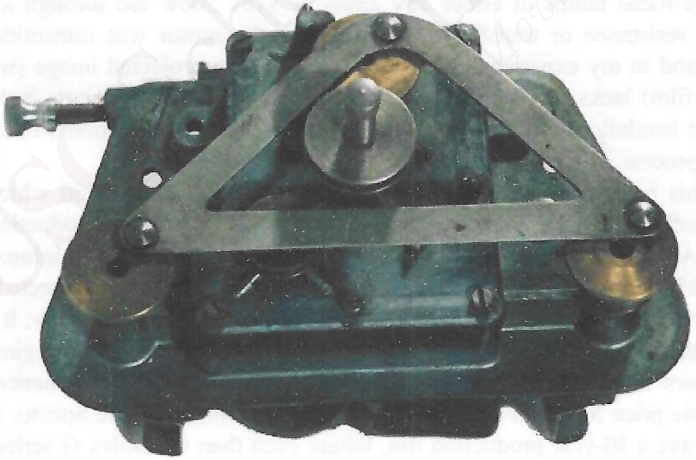


Houghton-Butcher factory in Walthamstow was an early casualty of the Blitz, this machine had one of the shortest histories on record. Sadly it was no great loss as the design was hardly the most modern. It employed an indirect lighting system using pre-focus lamps of either 50v 250w or 110v 500w fed through a large external resistance or transformer. Drive from the motor was transmitted by friction and in my experience of one today the entire projected image (with or without film) lacks vertical stability. Certain key rubber components including electrical insulation will now have disintegrated and modernisation would be a lengthy process. Not recommended.

This brings us to the final offering from the pre-war period which has undoubtedly been the mainstay of 9,5 enthusiasts ever since its introduction, the Specto. Always made in England, it was the brainchild of a Czech engineer, Jan Danek, who started out in a small workshop in Farnham Royal. The Specto began life as a 9,5mm projector and had a green wrinkle paint finish originally. It made few pretensions to style but was always extremely functional and well engineered. Nine-fivers had been waiting for a sound design of good performance at a reasonable price for years and at last in 1935 they found it in the Specto, which was to have a 30-year production run, longer even than the Bolex G series. The original cost was only £11.85 plus £1.50 for a lamp transformer or resistance unit for the user's mains supply. At this price one could hardly expect still picture or reverse running refinements and the Specto did not offer them, at least for many years, but as a straightforward movie projector giving excellent results without fuss or fragility for a long operating life it must be doubted whether the Specto ever had an equal regardless of price. Its solidity and reliability gave the operator

a total confidence that he had probably never experienced before. And one may experience it still. The machine was built from alloy diecastings rigidly bolted together except for the offside mechanism cover, which was held on by four milled thumbscrews, and the lamphouse cover held in place only by gravity. Originally a special Prefocus bulb of 30v 100w with a compact filament was used fed from a transformer fitted in the base, providing splendid stability. The shutter had an opaque sector of only 120° and was geared to rotate three times per frame. Consequently it only blacked out one third of the available light and meant the pull-down was achieved in less than a ninth of the frame cycle. All very efficient, especially as the lamp was backed up by a large and effective reflector and condenser system such as Pathéscope might dream about. Specto Ltd. ground the specially designed condensers themselves.

Such was the immediate acceptance and popularity of the design that Mr. Danek was soon able to move operations to a new factory in Windsor. The firm's publicity stated that "each Specto projector is individually built to hand-made standards in our Windsor factory, and personally tested and approved by the designer before being released. We make ALL PARTS ourselves on precision machinery and even do our own die-casting. All wearing parts are made of expensive high tensile steel, machined to .00025 in. accuracy. Precision gears, spiral and worm drives, ball-bearings and rewind clutch are all enclosed in a sealed gearbox, where they run silently in an oilbath, and never require attention."



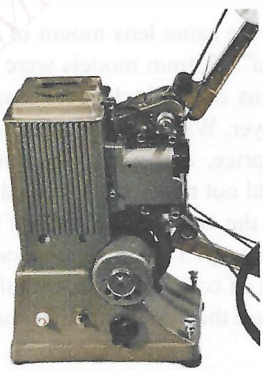
At first a triangular linking plate was used to transmit motion from this gearbox to the upper and lower sprocket wheels, but this became noisy with wear and was soon replaced by a chain drive. Another problem with the first models concerned gate access and the lack of a framing adjustment; the pressure pad had to be lifted out for cleaning. In 1938 Mr. Danek cured both problems at a stroke by

stealing the Siemens solution and mounting the lens carrier on a hinge at the front enabling the whole carrier with gate attached to be swung out for cleaning and indeed complete access to the intermittent mechanism. On swinging it back again the carrier was located by a point at the end of a long thumbscrew, which could be used to move the lens carrier up and down on its hinge thereby providing optical framing, as on the Siemens. Opening the gate in this way also enabled one to monitor the level of the oil in the gearbox through a small circular window below the claws. The oil level was supposed to be halfway up denoting an oil depth of an eighth of an inch. Unfortunately over some years of use visibility became impaired as the window tended to silt up internally with debris from the brass gears. In the late 1950s this system was abandoned in favour of a grease-packed gear box, at which point the letters "GR" were stamped on the nameplate.

The twin claw of the Specto was self-locating, or to quote from the Operating Instructions "It is not necessary to adjust the film perforations in step with the claw movement, because the cushioned claws automatically 'find' the sprocket holes". Consequently the Specto claws would not punch their own perforations into the film, unlike some other designs which were not so lightly sprung.

Specto Ltd were able to go on selling projectors through the 'phoney war' but when finally ordered on to war work it was to produce 16mm projectors for use in analysing gun camera films. Some were simple hand-cranked machines and others were quite sophisticated movie projectors with electrically governed speeds of 16 and 2 f.p.s. and still pictures.

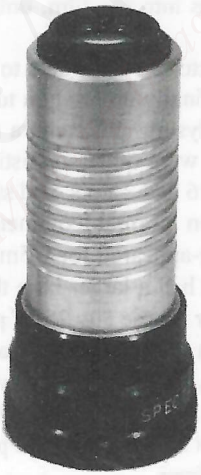
When normal commercial production resumed in 1948, the standard machine re-appeared for 9,5mm but there was also a 9,5mm Educational model on offer. It had a larger base than the normal machine to accommodate a bigger transformer for the 50v 250w pre-focus lamp ironically used pre-war by Siemens. Apart from this change and a stout carrying handle mounted at the top of the lamphouse, the only other advantage of the Educational model was that it came supplied with a coated lens. However the 0-2-16 f.p.s. feature was reserved for their 16mm Motion Analysis projectors supplied still to the War Department and industrial firms.



In 1951 Specto introduced their "500" model, featuring a 110v 500w pre-focus bulb. Once more Siemens practice was adopted, as this model had no transformer but employed a coiled resistance wire on a ceramic former standing upright next to the lamp and sharing its fan cooling, rather a backward step. The bulbs were costly and had only a 25 hour life, so the toggle switches for motor and lamp were superseded by a single rotary switch for motor, then lamp at reduced voltage and finally at full voltage. The best feature of this new addition to the range was the fitting of 900ft arms as standard, and cleverly designed so that when folded against the machine for storage the upper arm served as a carrying handle.

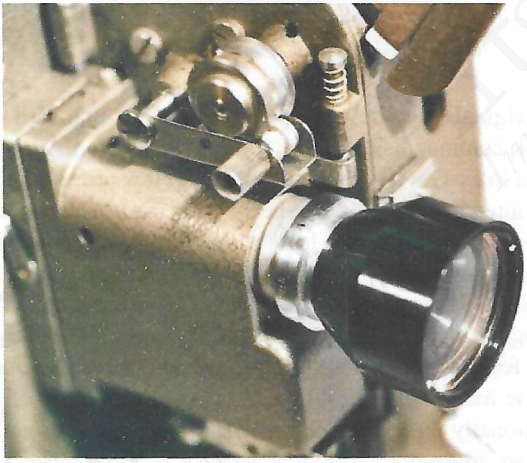
At this time therefore Specto Ltd. most curiously were supplying four different 9,5mm models, the Standard (£36), Educational (£48.50), 500 (£48.50) and a dual gauge 9,5/16mm model (£56). Yet there was very little difference between all these models, except the illuminant which did not give dramatically different results regardless of which model was selected. Arguably the Standard was best as the lamps cost only 59p, the machine ran at its coolest and screen brightness was ample.





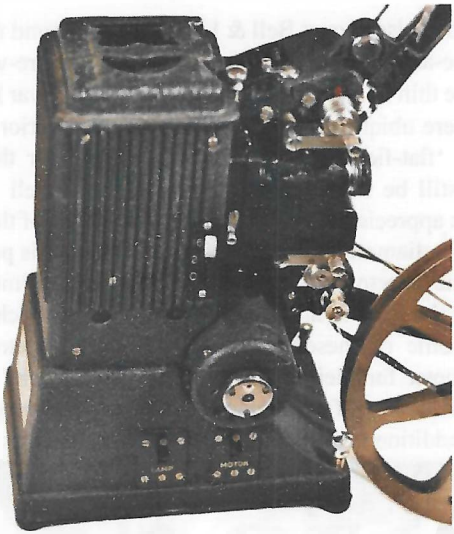
All these machines had the same lens mount of one inch diameter, which Specto claimed to be "standard". 9,5mm models were generally supplied with a Taylor, Taylor and Hobson lens of 1½ inch focal length and f/1,9 aperture, or alternatively a 1½ inch Dallmeyer. Whilst these lenses were certainly adequate for a projector of fairly modest price, and a vast improvement on any lens in a Pathéscope machine, they could not really be described as of optimum quality in terms of their ability to focus the centre and edges of the projected image with maximum sharpness simultaneously. The 2-inch versions of these lenses perform much better in this respect, but of course project a smaller picture. There are few solutions to this dilemma because the "standard" of a one inch diameter barrel was

hardly used by anyone else except Bell & Howell until around the time the Specto was conceived. One-and-one-half inch lenses for ancient pre-war Bell & Howell Filmo projectors are thin on the ground. However the post-war Bell & Howell 631 series projectors were ubiquitous for many years and superior T.T.&H. 1½ inch lenses with added 'flat-field element' were produced for them in reasonable numbers and can still be found. But the Bell & Howell one-inch helical focusing barrel was appreciably shorter in length than that of the Specto and once outside its holder the diameter of these lenses increased. It is possible to do some re-engineering of the Specto lens holder by introducing a 29mm diameter boring bar and drilling out the front to a depth of around 20mm which may be sufficient to accommodate some of these later B.&H. lenses. Specto themselves only increased this diameter for their final model of the 'upright' range, the 16mm Specto 750. The difficulty of obtaining a larger screen image in the home is usually met by the addition of a wide-angle attachment, such as the Ciné-Larga, to



the existing lens. Another solution is to cannibalise a 25mm f/1,9 Anastigmat lens from a pre-war Ciné-Kodak 16mm camera, which will be found to fit rather conveniently in a Specto lens denuded of its original optics. The four-element Kodak lens consists of two couplets each of which can be unscrewed by hand using the milled rings at back and front. The rear element can usually be screwed home instead into the rear of the Specto lens (same thread) and the front couplet must then be introduced from the front using a small spacing collar or preferably a coil spring which will allow correct focus to be obtained visually as the front couplet is pushed back in the direction of the rear couplet. The air space, formerly containing the iris diaphragm, is quite small and critical.

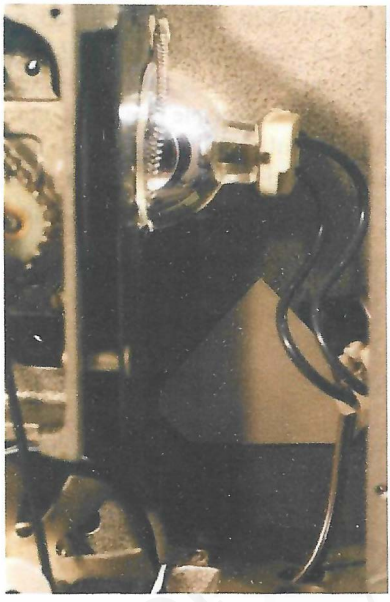
The 'upright' models of the Specto never featured Q.I. lighting except in the three 16mm Motion Analysis projectors, which all featured the 12v 100w A1/215 bulb (originally designed for 8mm projectors) and a suitable condenser system and reflector. It must be doubted whether this arrangement gave as good a



result as the original 30v 100w lamp of the pre-war Standard machine, but the pre-focus bulbs command silly prices today. The Motion Analysis machines are currently found in ex-Govt. surplus stores at very low prices (around £30) and due to the general interchangeability of Specto parts are a worthwhile investment for any nine-fiver using the Specto. In fact they are easily converted to 9,5mm if desired, provided one can come by the 9,5mm sprockets, gate and spool holders. The Model I just has the regulated 0-2-16 f.p.s. speeds, whereas the Model II adds reverse running by a gear change and a frame counter and is the most desirable model; it also features a push-button to advance the film by one frame when in stills mode. The Model III is best avoided except as a fount of spare parts, as it provided additionally for remote control of all functions, forward and backward, and sprouted an enormous additional base to accommodate all the necessary relays and electronics, making the machine unmanageably heavy and also unreliable.

Modernising the 9,5mm Specto only requires the illuminant and its associated transformer to be changed and space will not normally pose a problem. The lamphouse is easy to dismantle for this work. In the example shown an A1/231 12v 100w Xenophot has been fitted, using the appropriate transformer from a Eumig P8. Surprisingly there is only just space for this lamp with its right edge touching the side of the lamphouse. The original lampholder, reflector and condenser are removed and the new lamp is mounted on the condenser panel, as with the Bolex PA/DA.

Unfortunately when Specto finally ceased projector manufacture they disposed of their entire stock of parts in skips rather than selling them, though it is rumoured that some employees at the Windsor factory rescued some parts from



oblivion. Fortunately the standard of engineering of these machines was so good that they rarely require spare parts other than bulbs and the occasional belt.

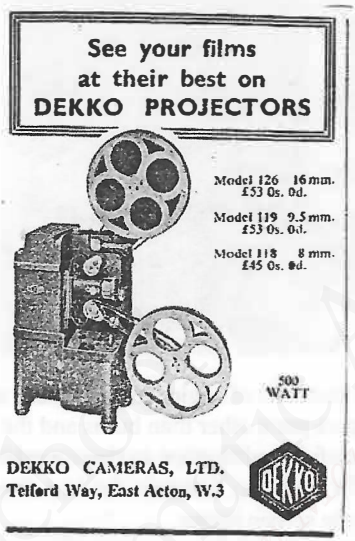
A small but most useful modification to these machines consists in adding an oversized rubber buffer half-way between the two fixed rear buffers, which will greatly aid levelling the screen image.

If it seems, as it may, that a disproportionate amount of space has been devoted to the Specto, it is because it is the most common and probably the most useful machine available to British nine-fivers, albeit nowadays at second hand.



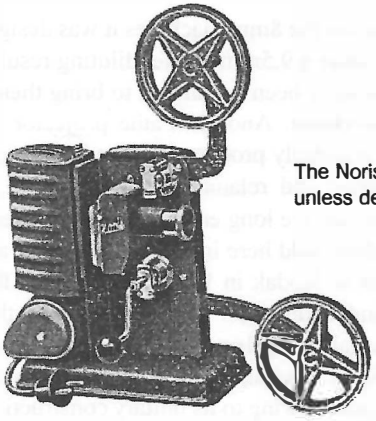
Immediately before the War and again on resuming peacetime production, Dekko Cameras Ltd., who had moved from Slough to a factory in East Acton, offered a modest little 9,5mm projector with feed and take-up sprockets and 400ft arms. As it had only a 50v 25w lamp and a small lens it was no match for

the Specto, but it sold for only £20 in 1950, or £7.85 pre-war when an 8mm version was also available for eight guineas. In 1952 they launched the Dekko Model 119 projector for 9,5mm, which was a completely new design featuring the 110v 500w pre-focus lamp and a reasonable lens. It therefore has to be mentioned as it was one of the few powerful projectors made for the 9,5mm gauge. It was even quite stylishly designed and finished in brown wrinkle paint. It used the same system of voltage reduction for the lamp as the Siemens and Specto 500.



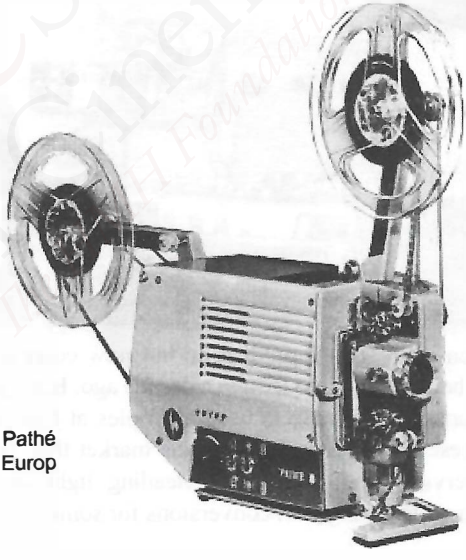
Versions were also made for 16mm and 8mm. However these machines are quite rare and were never popular. They were pipped at the post by the Specto 500. The Model 119 was priced at £53 but had only 400ft arms, whereas the Specto 500 and even the Pathéscope Gem took 900 ft. reels and sold for much lower prices. Though quite well made they were a commercial failure and so did not remain in production for very long. You win some, you lose some.

Also in 1952 there appeared a 9,5mm projector from the German manufacturer Noris, which regrettably was not up to the standard of their later 8mm designs. It was of pressed steel construction somewhat reminiscent of the pre-war 16mm Kodatoy or Kodascope 8-30 machines and sold for only £18.90. It was finished in a battleship grey wrinkle paint and had 400ft arms and feed and take-up sprockets. It was intended for use on a 200/250v AC/DC supply and was fitted with a mains voltage 100 watt lamp. The lens was of rather poor quality and long focus. The machine came with a crank handle to fit the lower sprocket and when you switched on the motor you could understand the reason, as the electric motor was woefully underpowered for its job and usually required the speed winding up to get started at all. Definitely not recommended unless desperate.



The Noris — not recommended unless desperate.

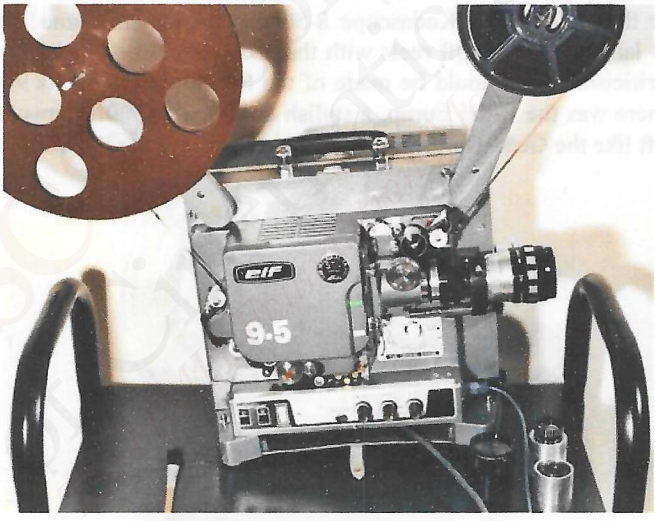
During their last decade Pathéscope Ltd. imported a very small number of 9,5mm projectors from the French Pathé firm. There was the Monaco designed for the doomed Monoplex 4,75mm gauge as well as classic 9,5mm. It featured a 750w pre-focus lamp but only had 400ft arms and the sprockets drove the film (of either gauge) by edge friction. Nowadays a curiosity likely to be overpriced for collectors. Then there was the Baby 60, a very conventional machine built into a box after the style of the Kodascope 8-500 and using the same 110v 500w pre-focus lamp. It took 400ft reels with the take-up reel below the level of the base, a criticism which could be made of the Specto only with its 900ft arms. Finally there was the Pathé Europ, a stylish design with 900ft. arms and single drive shaft like the Gem. Unfortunately it was fitted with the 8v 50w A1/17 bulb



Pathé Europ

which was barely adequate for the 8mm machines it was designed for and required a divergent condenser to cover a 9,5mm frame, diluting results still further. But a number of these machines have been re-lamped to bring them up to standard and they are worth the improvement. Another Pathé projector of the time was the Mirage, like the Monaco originally produced to handle Monoplex film but, again like the Monaco, redesigned and relaunched for classic 9,5mm in the 1960s, though Pathéscope did not survive long enough to import them. The Comète was also a useful modern machine sold here in small numbers at a high price.

Once Pathé sold out to Kodak in 1970 there was no further production of new 9,5mm projectors and enthusiasts soon had to turn their attention to the possibility of converting established 16mm designs to 9,5mm use. André Ligonie pioneered this work, wisely choosing the popular Japanese Eiki design for conversion. With this machine, owing to its unitary construction, it was possible to insert spacers of a quarter-inch thickness under the screws holding the mechanism plate to shift the film transport to a new position where in a re-designed gate the existing claws could operate on 9,5mm central perforations. Obviously it was also necessary to provide 9,5mm reel holders, idlers and sprockets, but the sprocket teeth were on a separate ring in the 16mm design and could be made use of for driving 9,5mm if suitably re-mounted.



The Eiki is seemingly still in production but now costs several thousand pounds and ceased to be imported into Britain a decade ago. But a great many were sold and there is a considerable trade in used examples at low prices. Such has been the supply of these machines on the surplus market that Tony Reypert, of Buckingham Film Services and nowadays a leading light in the Group 9,5 organisation, has been undertaking Eiki conversions for some five years. In 1999

he announced availability of the 9,5mm "Classic" Eiki based on the RM Series at the price of £475. In this the amplifier, sound drum and exciter are removed and blanking panels fitted. Optional extras, which any cinematographer would consider essential, include provision of a 3-bladed shutter and running speed of 16 f.p.s. The basic machine being designed for sound films has a two-bladed shutter and speeds of 24 and 18 f.p.s. As the shutter is belt driven from a constant speed motor it may be thought that the 18 f.p.s. could be slowed to 16 f.p.s. by reducing further the diameter of the 18 f.p.s. pulley, but if this is attempted it will be found that the drive belt begins to lose grip before 16 f.p.s. is attained, so it is necessary also or alternatively to increase the diameter of the corresponding pulley fitted to the shutter. Mr. Reypert has acquired some solid experience in this work now and his latest gate design has come in for praise. The Eiki is noted for putting a brilliant steady image on the screen, with its 24v reflector lamp and first rate lenses; the mechanism is quiet running yet the machine is none too heavy for its size. Naturally it accommodates 2000ft reels and these have also become available to the ninefiver in the past year or two. Obviously a newly built machine of this kind could not possibly be sold for £475 today, so the opportunity being offered here seems very worthwhile. For the plutocrat Mr. Reypert even has a model with a Xenon lamp.

Since any purpose-built 9,5mm projector described in this chapter will require conversion to a lighting system based on the Tungsten Halogen principle, it may assist some readers to have basic information on how to undertake this for themselves. Clearly a detailed course of instruction on how to deal with all models of projector would take many pages and be beyond the scope of this manual, especially as there may be more than one solution to the problem.

In general terms, however, one should seek to instal a lamp of 24 volts with a wattage of 150, 200 or 250. Alternatives one may consider according to availability of a suitable transformer, could be 12 v 100w or 15v 150w. All these lamps will require the SAME ceramic lampholder type G6,35 which accommodates the two 1mm dia. pins of the bulb with 6,35mm separation. The lampholder needs to be connected to the output of the transformer with 10 Amp. insulated wire, which can be obtained on small reels from motor parts suppliers. Where possible the on/off switch for the lamp should be fitted to the mains input side of the transformer where the current loading is much less.

There are essentially two types of lamp available over the desired range. The original A1/209 was designed to replace the A1/186 12v 100w S.C.C. bulb fitted in Eumig 8mm projectors and has a quartz envelope 45mm tall with a flattened filament connected across the two mounting pins. The slightly larger A1/216 24v 150w pattern was adopted by manufacturers of most 35mm slide projectors. The A1/223 has a 55mm tall envelope for 24v 250w. All these lamps, and the A1/234 15v 150w, have a rated life of 50 hours and may be fitted with their filament taking the place of the obsolete lamp, retaining the original reflector

and condenser system. However, the filament will almost certainly be smaller than the original and some experimentation may be required with re-aligning the reflector/condenser system for optimum results. All these lamps cost only £2 or £3.

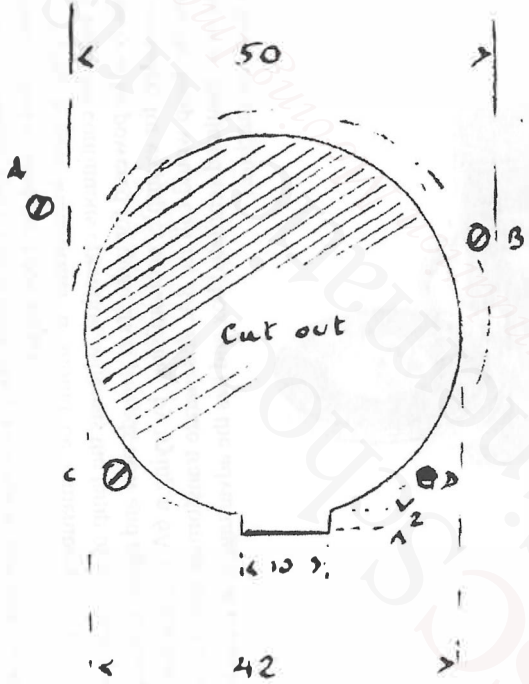
The alternative pattern, developed specifically for ciné projection, has the bulb built into a dichroic reflector, which adds considerably to the replacement cost, but is worthwhile due to vastly increased efficiency. For instance the writer initially fitted the simple A1/216 lamp in the lamphouse of the Bolex DA, which produced a satisfactory result and generated much less heat than the original lamp. But on replacing the A1/216 with the reflector type A1/252 (American type EJL as used in the Eiki 16mm projector) which admittedly consumes an additional 50 watts the brightness on the screen increased by four times, even though the correct focal distance for this lamp is only 32mm and the light path in the DA is much greater than this. The equivalent 12v 100w type is A1/231, and 15v 150w A1/232.

In many ways, provided there is space, the reflector lamp is the easier option to fit, as there is no need to fix the lampholder at the correct height or at all, since it simply plugs on to the pins of the bulb, which is held in place by the perimeter of the reflector. In most cases the panel on which the condenser was originally mounted can be re-used for holding these lamps and they already feature a large hole correctly centred. Alternatively sheet aluminium can be used; cutting a large hole can be accomplished by scribing a 42mm dia. circle and drilling numerous small holes around the inside of the circumference, finishing the hole with a file. On the same centre also scribe a circle of 50mm dia (size of reflector). Drill holes for self-tapping screws just outside the 50mm circle in the positions indicated on the accompanying sketch, leaving the heads protruding 2,5mm from the surface. The position of screw 'A' in the diagram is not critical, but when a spring (a section of steel drive belt, for example) is stretched between it and screw 'B' it should hold the lamp in place when the reflector is tucked underneath.

Transformers have always been and still remain a costly component. They are also heavy. But they are electrically efficient and infinitely preferable to the resistances employed for cost saving with many 9,5mm projectors. The first question that arises is whether the machine being converted has sufficient internal space to contain a transformer, which is clearly the preferable option. In the case of the Specto and the Bolex G series the answer is clearly affirmative, but more compact designs such as the Bolex PA or DA or the Eumig PIII do not allow of this unless the machine is mounted on a box. The Specto being produced for the U.K. market was always self-contained as was the Dekko 119, but the majority of European projectors (being designed for 100v mains supply) always had to be fed through an external transformer or resistance unit, so life is not impossible if this arrangement is to continue. In the case of the small Bolex and

Secure spring under heads of self-tapping screws A & B.

Heads of screws B, C & D should be 2.5mm proud of surface to trap rim of reflector



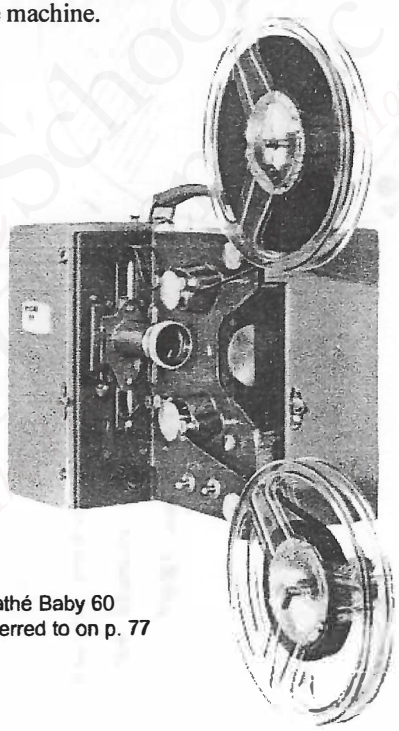
Arc between screws B and C should be less than 180°

} File out 10 × 2mm slot for orienting lug at base of reflector (if present)

Eumig machines just mentioned, no harm is done if the Q.I. lamp is left on without the motor running. Indeed it should be mentioned that the wall temperature of these lamps needs to run at 350°C if the tungsten is to bounce off and rejoin the filament, so it requires protection from forced cooling which should be diverted towards the gate or arranged to remove hot air from the lamphouse.

The most economical source of suitable parts is surely other projectors, such as slide projectors or redundant 8mm machines, which are often found cheaply at car boot sales or in secondhand or charity shops. Such a machine may also yield up the required lampholder, though these are not expensive. With any luck this transformer will have suitable tappings on the primary to suit American or Continental voltages and if one is converting a European machine a connexion can be made to this to feed the 100v motor.

If buying a new transformer it should be remembered that these are normally rated for continuous operation, whereas the lamp of a 9,5mm projector is only likely to be powered for quite short periods now and again. Consequently one can consider, for example, economising by trying a 6A continuously rated unit where the lamp would call for 8A. A separate transformer unit will need to be housed in an insulated ventilated box and has the advantage that it can be used for more than one machine.



Pathé Baby 60
referred to on p. 77

CHAPTER FIVE

Editing Gear and Titling

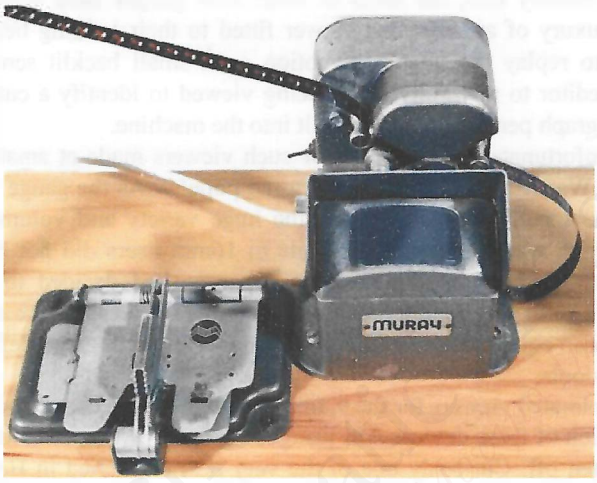
It has already been stated that to practice the art of film editing the cinematographer, assuming he has a projector for viewing his rushes, only has need of a magnifying glass, a pair of scissors and a splicer for making joins in the film. Whilst literally true, the users of other film gauges have normally also enjoyed the luxury of an animated viewer fitted to their 'editing bench'. This enables one to replay the image in motion on a small backlit screen whilst allowing the editor to mark any frame being viewed to identify a cutting point using a Chinagraph pencil or a punch built into the machine.

Most unfortunately there were few such viewers made at amateur prices before World War II when 9,5mm ciné was so popular. As the gauge was never adopted professionally even in France, the huge variety and volume of such equipment which was to become available to 16mm users did not benefit the ninefiver. And similarly by the time the Japanese had decided to dominate amateur ciné 9,5mm was commercially dead, so there is no Japanese or, for that matter, American equipment one can look to. In this respect 9,5mm definitely fell between two stools.

Most animated viewers for the 9,5mm gauge therefore date from the 1950s when production of these devices was just getting under way and 9,5mm had not yet been written off. Curiously one of the very best originated in Britain from Haynor Ltd. Originally it was rather primitive only offering a small sideways image in a magnifier, but it was soon followed by the Haynorette in which the image was reflected by a number of surface-silvered mirrors on to the back of a frosted glass screen. The image quality was good and the Haynorette had a unique advantage over its competitors (all French) in that its external rotating prism was hexagonal which reduced the amount of flicker and picture cut-off experienced with the more common square prism which had two sides blocked off like a barrel shutter.



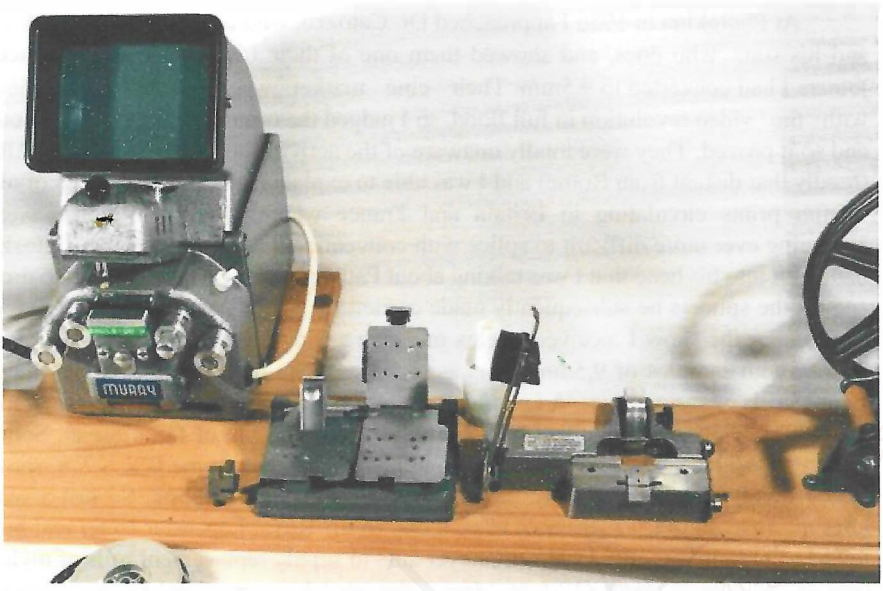
The French designs marketed here were the Ferquin, G.I.C. and predominantly the Muray range, comprising about five different models. The basic Muray Model M had a small 5cm. wide screen like the Haynorette and for a pound extra the MHB (higher brightness) offered a thicker ground glass screen / magnifier of similar dimensions. The famous Muray Luxe had a screen four times larger for twice the price and was possibly the biggest selling animated viewer of all time, though few



9,5mm samples found their way across the Channel. With the revival in 9,5mm film making in recent years and the ready availability of used 16mm Luxe viewers, a number of conversions to 9,5mm have been successfully carried out. This is not a very difficult task although the re-use of the 16mm sprocket teeth does tend to cause a pecking noise without apparently damaging the 9,5mm sprocket holes. The screen must be raised about 20mm from its 16mm position if it is desired to fill it with the 9,5mm image, a point which seems to have been ignored on some conversions. Alluring as the large bright picture of the Luxe undoubtedly is, there were of course a great many designs of 16mm viewer placed on the market and some are simpler to convert to 9,5mm than the Luxe with its curved gate.

While both cameras and projectors have been successfully converted from Super-8 to 9,5mm in the past and Super-8 viewers are cheap and plentiful, they do not make good candidates for conversion as the optical parts like the lens and prism would be too small and a 9,5mm sprocket and gate would be needed.

Failing all else, inexpensive inspection viewers such as Photax and Thomas used to sell can be found or are very easily built. They consist simply of a small box containing a 15 watt pigmy bulb with a ground glass screen above. Over this is suspended a pair of rollers to guide the film and a magnifier lupe held above at the point of focus.



Considering their pioneering work in other spheres of cinematography, it is rather surprising that Pathé never introduced any editing equipment. After the introduction of their 300ft 'Super reels' they did provide a rewind which allowed for adding their 'film mender' — this was hardly a splicer as we know it, as it consisted of just three metal clamps fitting over a film path. This was not a film making tool and Pathé never really improved on it.

During a period of about twenty years from 1936 various improved semi-automatic cement splicers appeared for 9,5mm., the best being in the form of tri-gauge instruments manufactured by Ensign, Bolex, Ditmar and the French firm Marguet, who also made very nice dual speed rewinds. The rewind was such a simple device that it was produced by countless firms over this period.

Again through bad timing 9,5mm missed out on the mylar tape splicing revolution in the 1960s. Intended as an editing aid, this innovation was made by Fellini's editor, Dr. Leo Catozzo, and protected by his patents for many years. Amateur versions for 16mm and standard 8mm carrying the Ferrania label were distributed here by Neville Brown & Co. Unfortunately they were sold with a roll of ordinary Sellotape, quite unsuitable for this application, and ended up gathering dust on dealers' shelves. In the late 1960s professional models for 35mm and 16mm using the correct non-oozing Mylar based tape became an indispensible item in the film industry's cutting rooms. Meanwhile the needs of the amateur were supposedly met by numerous manufacturers in America, Japan and Germany producing systems which relied on the user buying quantities of pre-punched Mylar sticky patches mounted on a grease-proof paper backing, thereby avoiding the patents.

At Photokina in 1986 I approached Dr. Catozzo, who does not speak English, and his son, who does, and showed them one of their 16mm 'Ferrania' amateur joiners I had converted to 9,5mm. Their ciné market was severely contracting with the video revolution in full flood, so I judged the moment could be propitious and so it proved. They were totally unaware of the activities of S.E.F. 9,5mm in Albi (hardly that distant from Rome) and I was able to explain there were hundreds of old 9,5mm prints circulating in Britain and France which, through old age, were becoming ever more difficult to splice with conventional cement. Once Dr. Catozzo had got it into his head that I was talking about Pathé prints the penny seemed to drop and all the splicers he subsequently made carried the name Pathé on a label. A few weeks after the show I received a telex message asking if I could supply the C.I.R. factory with samples of 9,5mm films as they had none for testing, so I sent them sample rolls of various ages. A few months later I received another telex advising me that the U.K.'s C.I.R. importer, Photographic Electrical Ltd., of Dean Street, Soho, (now PEC Video) would have the first sample 9,5mm joiner at the B.K.S.T.S. show which was held each year when the biennial Photokina was resting. So just a year after my first approach I was able to go along to the Royal Lancaster Hotel and buy my heart's desire for £40. PEC were never able to supply replacement rolls of mylar tape of the correct width (12,5 to 14mm) though I have managed to source them elsewhere. However, when I last visited the C.I.R. stand at Photokina in 1992 they told me they would be happy to send a dozen rolls by post C.O.D., their address being Costruzione Incollatrici Rapide, via Ferdinando Fuga 2/B, Roma, Italy. It should be mentioned, though, that mylar splices cannot be relied upon to hold for much more than eight years, though they are easily re-made without losing a frame.

No equipment has been produced for editing 9,5mm as a sound film medium, just as with 8mm. Whereas such equipment was produced in great quantity for the professional use of 16mm in television, it depended on the use of work prints for the editing process and the ready availability of fully coated magnetic film stock, not to mention appropriate recorders, editors and projectors for this material. This may seem to be a serious drawback, but in reality it is not. After all, Chaplin, Keaton, Lloyd and so many others created cinema classics with no such aids and the inability to cut sound does not mean that one's films must be screened in silence any more than theirs were.

If one is able to locate a 9,5mm editing bench complete, well and good, but this is none too likely. Instead one may have to construct one's own bench and add the necessary items to it as and when found. This is easily done. Ready made bookshelves are available at low cost these days from DIY centres and one of these measuring approx. 2ft x 8ins. (60 x 20cm) or longer should be obtained and given two coats of varnish. Four rubber buffers should be fitted to the base. The leading edge of the board should be marked along its length at 12cm intervals to denote seconds at 16 f.p.s. Rewinds preferably accommodating reels up to 900ft should be fitted at each end and a cement splicer and viewer mounted between as available. It is

available. It is a good idea to decant film cement into an old nail varnish bottle of such a size as may be easily kept in an uncapped pill box or 35mm film container permanently fixed to the board near the splicer. A can of film cement sufficient to last a lifetime may be ordered at low cost from any Kodak dealer. Or you can ask your chemist to make it up for you using equal parts of glacial acetic acid, acetic ether and amyl acetate. Any used cement splicer will need to be carefully checked to ensure that the splice it makes is perfectly aligned and that the metal plating in the splice area has not deteriorated.

The art of titling ciné films used once to be a high spot of the hobby and has always been an area where individual skill could be shown off. As positive film remains available for 9,5mm and chargers still abound, the opportunity exists to load quite short lengths of film which may be processed at home in a shallow dish using a red safelight. Black on white artwork will yield the desired white on black titles, which is highly convenient. The positive stock has a very slow speed of only about 15 ISO, but this is not a problem with a small subject like a title even in artificial light.

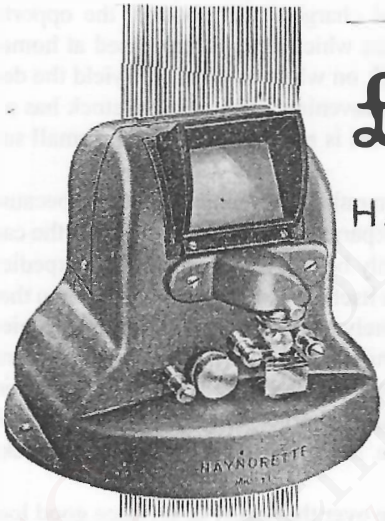
9,5mm cameras have always been rather convenient for titling, because the parallax error which exists between a separate optical viewfinder and the camera lens at very short distances can so easily be tackled by the simple expedient of examining the image in the camera gate itself. It is only necessary to open the gate and insert a transparent piece of film finely matted with emery cloth or a piece of 3M Magic Tape and once the motor is run down and the shutter opened, using the inching knob if necessary, one can view the precise position of the title in the frame. Even if the camera is loaded with a charger, only a few frames are lost if the charger is removed for this exercise. Naturally sharp focus can be checked at the same time.

Any reservations one might have over the ability to produce good looking artwork can be met by employing the rub-down lettering system pioneered by Letraset. Though this may give a more professional looking result the opportunity to contribute your unique style is thereby lost.

If one contemplates doing much of this work it may be found worthwhile to construct a stand possibly employing a camera with single frame movement (such as the Pathéscope H or Prince) permanently mounted. Once one has decided on the size of table on which titles or indeed animation will be filmed the fixed focus lens normally fitted on these Pathéscope cameras can be unscrewed for correct focus and a permanent shim made to hold the lens at that point when screwed down. Determination of the field being covered can be made as described above or even by shining a lamp through the gate to project its image on the table. Some allowance must be made for projector mask cut-off. When titlers were marketed, as they were in great numbers in the heyday of 9,5mm., they generally employed a horizontal format with the camera upright at one end. However, for serious work it is much more convenient to construct a vertical

titler, so the table carrying the artwork is horizontal and the camera (and lights) held above. A polarising filter is useful for eliminating reflexions from shiny artwork and the table should be illuminated by two quartz lamps, say 100 watt, equidistant from the table and each at an angle of 45° from the centre of artwork-to-lens axis, mounted in appropriate reflectors.

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CHAPTER SIX

Sound

The cinema is an illusion, an artifice, trickery, call it what you will. This applies both to the picture and to the sound. We have now survived the first century of cinema and it is generally assumed from this distance that somehow once the talkies arrived in 1928 the movies were thereafter made with cameras that recorded the sound before them. Nothing could be further from the truth. Initially the talkies were recorded not just by Warner Bros., but by M.G.M., Paramount and the rest, using 16-inch gramophone records with a centre start. The camera was motorised to run at 24 f.p.s. after Warner's sole New York City projection chief had advised Western Electric that that was the average projection speed used in the theatres (90ft per minute). At first the noisy camera had to be housed in a soundproof blimp with just enough room to contain the operator also. Technological advances were rapid. By the end of 1931 the disc system was abandoned in favour of sound recorded on film, which introduced the possibility of sound editing. And a noiseless camera mechanism was developed by George Mitchell, but these studio cameras were so heavy they required four men to move them. Location shooting, of which there was rather little in early sound films, was therefore carried out with 35mm cameras whose noise output matched that of a lawnmower. So the location sound had to be recorded separately and faked in the editing. This modus operandi remained standard practice in the Italian industry until quite recently.

It was not until the mid-1960s when Eclair introduced their famous 16mm NPR (noiseless portable reflex) camera that an ergonomic self-blimped design became available for television documentary shooting. Prior to that there had only been the pre-war Bach Auricon available and it did not have reflex viewing and assumed the use of a tripod. The Eclair was followed by the heavier less ergonomic Arriflex 16BL. Then came the smaller and lighter Eclair ACL and this was followed by the Arriflex SR, with final victory to Beauviala's Aäton. But the professional cinema still used 35mm as it does today, though the technology for producing a 35mm negative from a 16mm original was constantly being improved. It was not until 1972 that Arriflex produced the 35 BL, a reflex 35mm portable camera which a strong operator could just about hand hold, whose mechanical noise level was regarded as tolerable for synchronised sound recording to be made. This prompted Panavision, who only rented their cameras and who had tied up most production majors, to develop a portable Panaflex camera for their customers.

Even when actual location sound can be recorded with a camera running, the cost of employing a film unit on an hourly basis is nowadays so high that producers are unwilling to risk their schedule being put back because a plane flew

nearby over their best take. Consequently it remains standard practice in Hollywood to carry out 'looping' sessions where the artistes or someone who can imitate them acceptably will post-sync the dialogue for location scenes. Needless to say the final track will have music and many effects added leading to a list of credits which takes minutes to unfold as the customers exit the cinema.

In theory the ninefiver can do all of this according to the skills, patience, time and equipment that he or she may have available. The only technical problem lies in the way of an assured means of playing the final soundtrack in synchronism with the film on projection, which also assumes one has been able to hold the picture in sync throughout the process of compiling a post-synced track.

Nowadays there are many sound recording media available whose speed constancy is so good, being locked to the frequency of a quartz crystal oscillator, that it can certainly be relied upon to hold perfectly for the length of any 9,5mm film you are likely to make. These would include the common VCR found in every home (but with automatic record level only) or the CDR (Compact Disc Recorder) or Mini Disc.

The projector poses a problem, as a perfectly constant speed was never in their design criteria, nor were the means of achieving it so readily available when they were manufactured.

In fact Pathé were once more the first in the world to introduce the concept of magnetic sound stripe on film, and on 9,5mm at that, back in 1953 before this had been attempted with 16mm in America. The projector made for this purpose was the Marignan which only ran at 16 f.p.s. and would take lamps up to 750 watt. The amplifier unit was separate from the projector, which also required the usual large auto transformer for a British mains supply. But it was not marketed by Pathéscope Ltd. until the end of 1954 by which time 16mm magnetic machines had already reached the British market—another opportunity missed. The cost was £190. The later Joinville magnetic/optical machine had the amplifier built in and naturally offered 24 f.p.s. as well as 16 f.p.s., but cost £270. There followed the PM9,5 and at £330 the PSM9,5, but very few of these machines were imported into Britain and they remain scarce collectors' items.

The only other manufacturer to produce a projector for 9,5mm magnetic stripe was Heurtier in France and some of their machines were imported. But this was a noisy and cumbersome design which required a soundproofed booth. It was a tri-gauge machine with 750w lamp and high grade Angénieux lenses. It had a metal stand with shelving below the projector head for the separate amplifier and even a separate magnetic record/playback deck for 16mm fullcoat, which naturally ran in sync. with the projector head. However in practice it was useless for 9,5mm optical sound unless shown through a reversing prism as the soundhead scanned the wrong edge of the film and the magnetic head unit for 9,5mm was the one used for 8mm stripe too.

The electronics of all the machines mentioned above were based on valve technology and so have been obsolete for a great many years. Consequently they

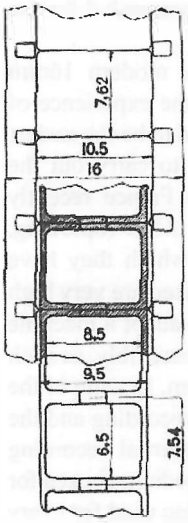
are not really worth the trouble of finding and could not be recommended for use today, as they would be unlikely to prove reliable.

This brings us back to the Eiki design or other more modern 16mm transistorised equipment. The Eiki stands out simply because the experience of 9,5mm conversions since 1970 appears to show that it has proved to be the easiest design to adapt, and Buckingham Film Services are offering to carry out the necessary work at a reasonable price. Ciné Club 9,5mm de France recently acquired a number of modern Meopta machines, the Models AS-3 (opt./mag. replay only) and the Electronic II (opt./mag. record/replay), which they have converted to 9,5mm and asked Ciné-Dia to sell, but the prices asked are very high (about £3500 for the Electronic II). In fact it is not essential to adapt a machine that has a built-in recording amplifier, or even a magnetic head assembly, as such components can always be added to a machine with a sound drum. Erasing of the striped film can be carried out on a simple bulk eraser prior to recording and the magnetic replay head can be temporarily connected to an external recording amplifier when transferring the final track from a tape or other medium chosen for building up the track. It is in fact rather desirable that the machine used for every day projection should not contain within it the means to eliminate the precious magnetic soundtrack through accidental erasure.

The magnetic stripe used for 9,5mm is normally the same as that employed for 8mm films. It has an acetate base and a width of 0,9mm. Usually the stripe is applied to both edges of the film to provide even spooling. If this is done and the stripe is accurately laid up to the very edges of the film, it is inevitable that it will encroach very slightly on the 9,5mm picture area if one takes this to be 8,5 x

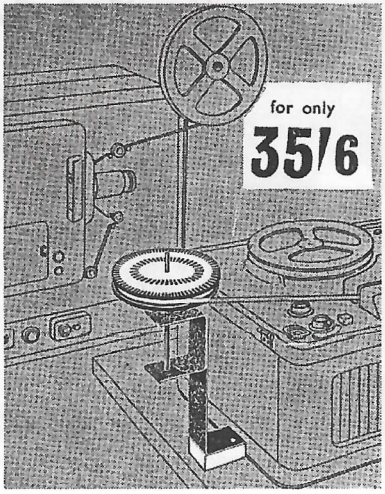


Magnetic sound stripe conversion of Elf/Eiki soundhead

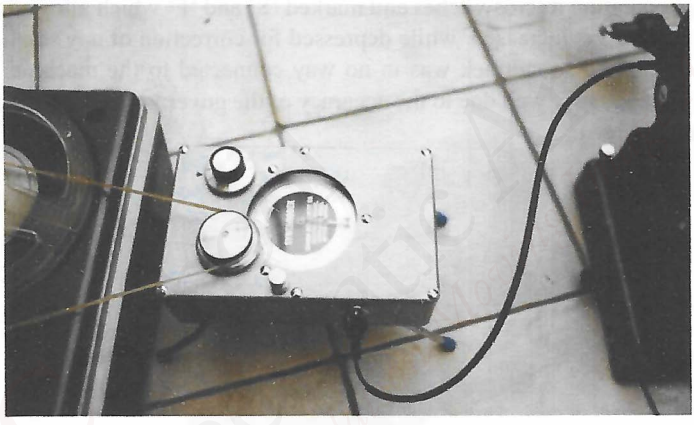


6,5mm, which are the image dimensions published by Pathé. There are no international agreed standard dimensions for the 9,5mm gauge because it remained from beginning to end a commercial product of Pathé Cinéma and they could adopt what standards they wished. It goes without saying, however, that notwithstanding the above published image dimensions any projector design is likely to have an aperture plate of rather smaller measurements, since the borders of the image are customarily masked to hide any defects or irregularities. In practice, therefore, although the film border is only 0,5mm each side of the picture and the stripe requires a width of 0,9mm, the projector gate mask is likely to hide this discrepancy and to the extent it does not, the only effect on the screen would be encroachment of a black border. In the Pathéscope 200B projector the vertical dimension of the aperture was reduced to disguise the fact that the machine had no framing device.

While the French always seemed to adopt the opposite standard to America where they could, as for example with the direction of reel rotation, and did so in the case of the edge of the film on which both optical and magnetic sound were recorded, the fact that so few magnetic projectors emerged from France has led inevitably to the adoption of 16mm practice where magnetic sound is recorded on the edge nearest the mechanism as with 16mm optical. This naturally facilitates conversion from a 16mm projector. The picture to sound separation is also to the 16mm standard of 26 frames, though some Pathé models had used 30 frames. The potential for stereo sound using the two available tracks has not been realised to date, at least commercially.



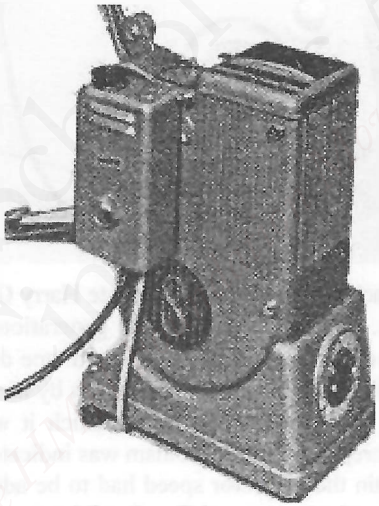
Although magnetic stripe has the appeal of automatically retaining synchronism and being readily replayable by third parties with a suitable stripe projector (not many such parties exist), there are of course various alternative methods of achieving a synchronised soundtrack with 9,5mm films. One of the first to be devised, which assumed the use of a ¼-inch tape recorder, was the stroboscope method. The ¼-inch tape was led around a pulley of appropriate circumference to give one rotation per second on its way to the take-up spool and a stroboscope on the top surface of the pulley was illuminated by the projector beam giving 48 obscurations per second with the normal 3-bladed shutter. The motor control had to be manually adjusted to a speed which held the strobe stationary, making it difficult for the operator to give his undivided attention to the screen, but the synchronism achieved by this method is quite satisfactory.



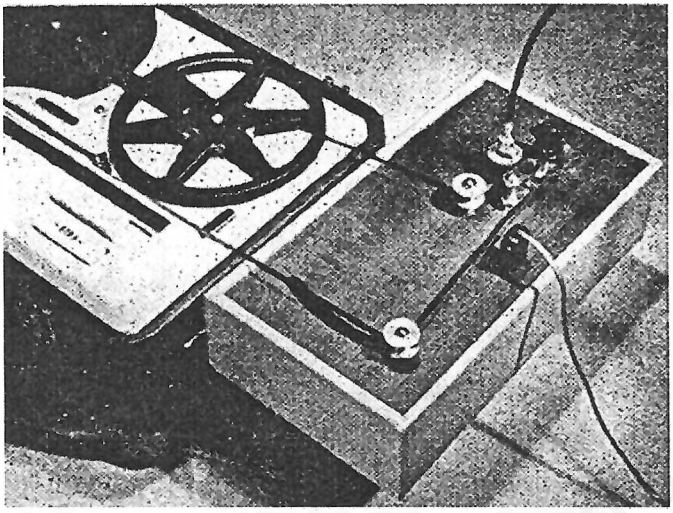
A similar approach was invented by the late Harry Garlick of Colne and called the Synchrodek. It went through a few generations, but as originally conceived it consisted of a pulley driven by ¼-inch tape driving one side of a differential gearbox with the other side being driven by the 8-tooth sprocket of the average projector, such as the Specto, to which it was connected by a flexible cable. Any discrepancy in synchronism was indicated on a large dial by a pointer and once again the projector speed had to be adjusted to restore the error in sync. However, in the second Synchrodek automatic operation was introduced. Provided a speed slightly higher than normal was set on the projector, the action of the sync indicator was coupled with a microswitch which added a ballast resistor into the motor speed control circuit of the projector when the excessive speed of the machine was causing sync to be lost. This worked smoothly in practice and at last enabled the operator to relax and watch the screen. The only weak link in this system was the tape pulley which was rubber covered to prevent slippage, but this could be eliminated by the use

of a pulley with sprocket teeth designed for perforated ¼-inch tape, which is still obtainable. Later versions of the Synchrodek eliminated the mechanical linkages and by shining a beam through the tape perforations produced electronically readable pulses which could be compared with those from a reed switch in the projector activated by a small magnet on the shutter shaft, again allowing automatic electronic control of the projector speed.

Owners of the 9,5mm Specto had yet another option in the form of the Specto Speed Controller. This was in effect the same 16 f.p.s. regulated make-and-break centrifugal governor used in their 16mm Motion Analysis projectors. It was contained in an alloy housing which was attached to the off-side of the machine. The inching knob was unscrewed and the governor mounted on the same spindle, while the normal rheostat speed control was bypassed with additional wiring. On the top of the housing were two small nylon buttons operating microswitches and marked 'S' and 'F' which allowed the speed to be slowed or increased while depressed for correction of any small lapses in sync. The taped soundtrack was in no way connected to the machine, but sync could be held fairly well due to the accuracy of the governor and at least one could watch the screen.



The loop synchroniser, as it was called, was a popular system for controlling the projection speed of many machines, especially for 8mm where the synchroniser was sometimes part of the projector. The ¼-inch tape in this case was pulled by a capstan driven by a sprocket shaft of the machine after travelling around an idler on a sprung arm which traversed a rheostat for the motor, before returning to the take-up spool of the recorder. If the capstan was pulling too hard the idler moved on an arc to increase resistance and slow the speed, and vice



versa. In practice the loop soon settled to a happy mean and the system ran automatically. A similar system involved the use of a tape driven commutator to control motor speed. Automatic tape synchronisers were available at one time for the Pathé Europ and also the French Cinegel GS9,5, a small projector built into a cast alloy frame with 400ft arms. This machine had feed and take-up sprockets and featured a special 10v 100w SAIPE lamp fed from an internal transformer, so should be a suitable candidate for re-lamping, though few examples were imported. Detailed drawings for the construction of a loop synchroniser to fit the Pathéscope Gem projector were once published in 'Amateur Ciné World' and it is a pity that Pathéscope never put it into production, but such a device is not a very difficult proposition for anyone with a modicum of engineering skill, as the capstan is the only precision component. They were also marketed as a separate item for any 9,5mm machine with an 8-tooth sprocket, which includes most designs.

Pathéscope Ltd. themselves tried to meet the undoubted demand for a magnetic sound stripe attachment for 9,5mm by announcing early in 1955 the introduction of their British made Aurator record/replay unit. The Model A costing £57 was intended for the Gem and Son projectors then in production. No connection was made between the projector and the attachment on which it stood except by the film itself, which had to be pulled through the head assembly by the take-up sprocket of the projector. A film driven stroboscope would indicate 16 f.p.s. speed when held stationary, which was rather essential with a variable speed series wound motor like that of the Gem. In the absence of a constant speed drive the quality of music reproduction through such a device would be unsatisfactory, and the picture-to-sound separation would be dependent on the model of projector used.

Put the Christmas Spirit on record this year—

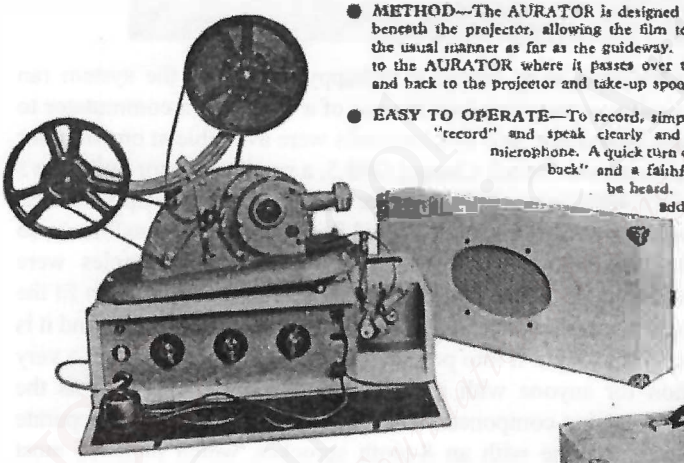
add SOUND to your personal films!

with the

Pathéscope

AURATOR

MAGNETIC SOUND-ON-FILM UNIT

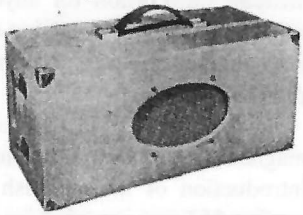


- **METHOD**—The AURATOR is designed to be placed directly beneath the projector, allowing the film to be threaded up in the usual manner as far as the guideway. The film then leads to the AURATOR where it passes over the sound head unit and back to the projector and take-up spool in the normal way.
- **EASY TO OPERATE**—To record, simply put the switch to "record" and speak clearly and distinctly into the microphone. A quick turn of the switch to "play back" and a faithful reproduction can be heard. If any alterations or additions are required, the recording can immediately be erased and a further recording made.
- **ECONOMY IN USE**—Excellent reproduction is obtained, operating at the unusually slow speed of 16 f.p.s.
- **STRIPING SERVICE**—ZONAL MAGNETIC STRIPING carried out by Zonal Film Facilities Ltd., under licence from Pyral S.A.R.L., Paris, at a cost of 1½d. per foot.

• • •

PATHESCOPE FILM SERVICE—Pathescope 9.5mm. films are available from 5/6 each. Wide choice of Westerns including the current favourite Hopalong Cassidy and other popular features; Cartoons, including Mickey Mouse and Donald Duck and a large selection of Charlie Chaplin films which are becoming more popular than ever. Ask your dealer for special leaflet and order form which gives full details of a first class selection of these films.

THESE WILL MAKE IDEAL CHRISTMAS GIFTS!



Showing the Aurator open 'ready for action' and closed to form a compact carrying case.

AURATOR MODELS are available for GEM, SON, 200B, H and other 9.5mm. and 16mm. projectors. Standard for A.C. 200-250 volts; also for other A.C. voltages.

Your dealer will be pleased to give a demonstration

With the passage of the years and technological "progress" (if that is the right word) the versatile reel-to-reel ¼-inch tape recorder has become almost as rare as the 9,5mm ciné projector, its place being taken by the Philips Compact Cassette. The recorders for this format are customarily driven by small D.C. motors whose speed can be varied to quite a degree by electronic control circuits. Whereas it has always been correctly assumed that absolute constancy in the speed of tape travel is essential for optimum sound recording or reproduction, the facility of controlling the small D.C. motor and comparative difficulty in controlling a much larger projector motor (especially since larger asynchronous types came into use) has resulted in the old formula being reversed. Nowadays the projector speed is used to control the recorder. The best known system at present on the market is the SimSync offered by Cresta Electronics Ltd and based on the earlier Carol Cinesound sync system. It consists of two elements, the Super



The CAROL CINESOUND CS-2 synchroniser unit contained a tone oscillator which was fed via a once-per-frame switch in the projector to a spare tape track. The resulting pulse track was then used to control the projector speed in all recording and playback by means of the unit's solenoid circuit.

SimSync pulse reader and comparator and a compact cassette recorder specially modified by Cresta to be controlled by the SimSync. Unfortunately the cheapest modified recorder in their range costs £338.10 and when added to the cost of the SimSync pulse unit (£114.45), the total bill is £442.55, which seems excessive for such a simple system, perhaps putting into perspective the cost of having a magnetic Eiki converted to 9,5mm. The SimSync system can however be used with a variety of projectors of any gauge and in that sense is a universal answer to a constant ciné quandary. It is worth adding that the cost of such equipment in the second-hand market is usually very low indeed.

In 2001 the directors of Cresta retired. The Super Sim-Sync business was transferred to Gilbert Electronics and striping service and supplies passed to Classic Home Cinema of Cleethorpes.

All in all, any system for synchronising a soundtrack is fine, unless you wish to enter your film for competitions, where magnetic stripe or the SimSync seem to be the only systems currently catered for, unless you are prepared to take along your own equipment as well as the film.

The problems associated with synchronising sound with amateur films now affect all the surviving gauges, due to the exhaustion of stocks of stripe material which can easily be laminated to the film base. However EvT Magnetics of Ticehurst can still provide a paste service for any gauge, which is a more professional and permanent solution than the laminating process.

CHAPTER SEVEN

The Dimensions

It has been mentioned earlier that there was never any governmental or professional adoption of the 9,5mm ciné format during its commercial lifespan, which in big business terms may be said to have ended in 1970 when Pathé-Cinéma was merged into Kodak-Pathé S.A. After that date there was no further industrial production of 9,5mm equipment, and Kodak-Pathé soon parted with their machinery which punched four perforations per stroke.

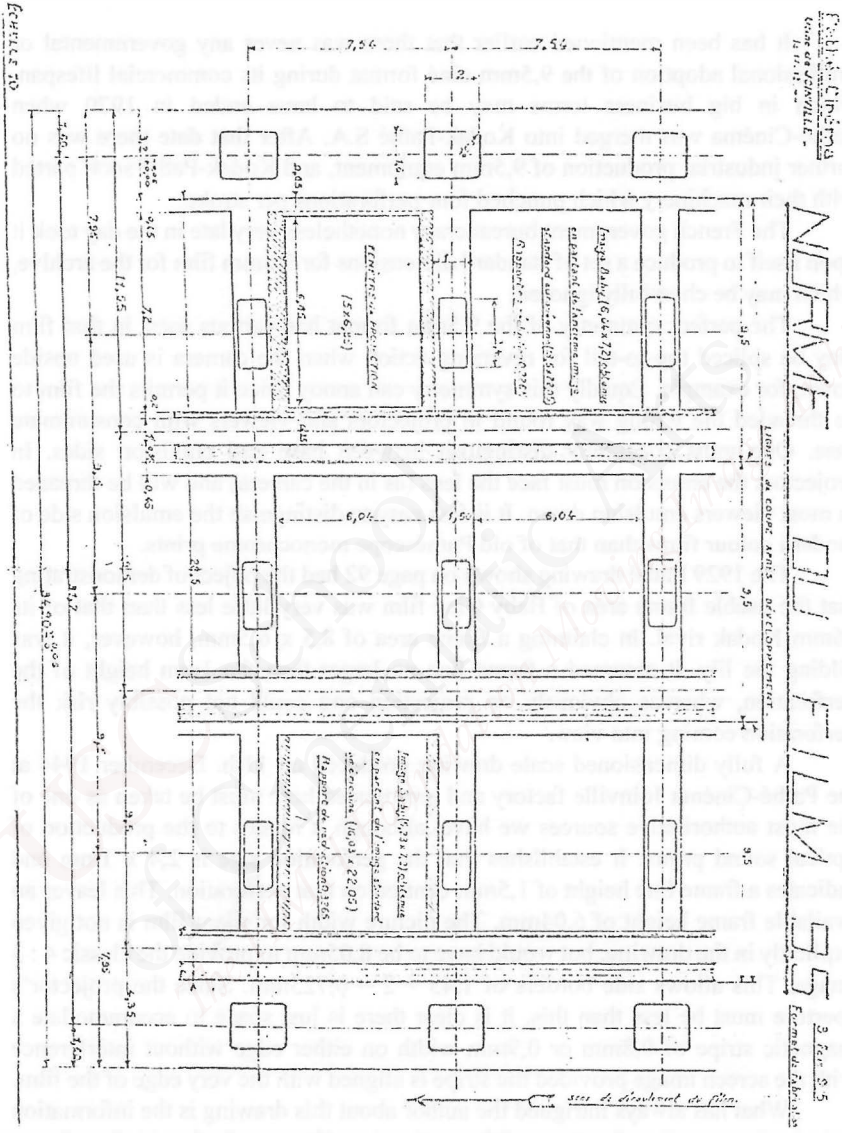
The French government bureaucracy nonetheless very late in the day took it upon itself to produce a set of standard dimensions for 9,5mm film for the archive, which may be cheerfully ignored.

The perfect symmetry of the 9,5mm format has various uses, in that film may be spliced top-to-tail for reversing action when the camera is used upside down, for example. Equally this symmetry can annoy since it permits the film to be threaded the wrong way round in projectors and viewers with consummate ease. One must constantly distinguish between base and emulsion sides. In projectors the emulsion must face the lens (as in the camera) and will be threaded in most viewers emulsion down. It is less easy to distinguish the emulsion side of modern colour films than that of old Pathéscope monochrome prints.

The 1929 Pathé drawing shown on page 92 had the object of demonstrating that the usable frame area of Baby Ciné film was very little less than that of its 16mm Kodak rival. In claiming a frame area of 8,5 x 6,5mm, however, it was gilding the lily. It assumed a frame line no larger than the 1mm height of the perforation, whereas obviously on projection one could not possibly risk the perforation coming into view.

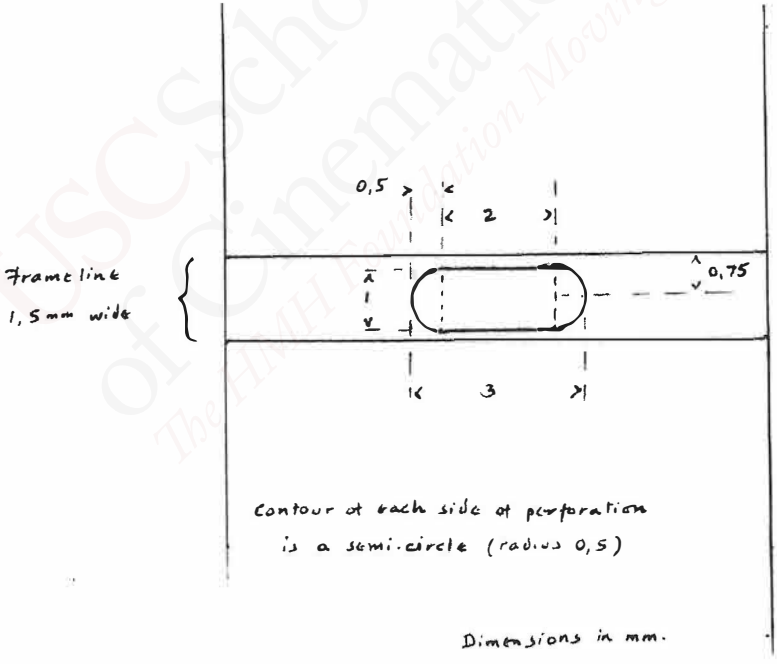
A fully dimensioned scale drawing produced on 11th. December 1944 at the Pathé-Cinéma Joinville factory and reproduced here must be taken as one of the most authoritative sources we have, although it relates to the production of optical sound prints. It establishes that the perforation size is 2,4 x 1mm and indicates a frame line height of 1,5mm centred on that perforation. This leaves an available frame height of 6,04mm. The picture width for silent film is not given explicitly in the drawing, but would have to be 8,05mm to provide the classic 4 : 3 image. This allows side borders of 1,45 ÷ 2 = 0,725mm. Since the projector's aperture must be less than this, it is clear there is just space to accommodate a magnetic stripe of 0,8mm or 0,9mm width on either edge without interference with the screen image provided the stripe is aligned with the very edge of the film.

What has always intrigued the author about this drawing is the information or lack of it regarding the shape of the perforation. Historically the chief weakness of the format has not been that claimed by Eastman (that the perforation is unsupported when struck by the claw), but that a great many films have been produced with virtually no radius to the corners of the perforation. As films


NORME 9,5
Ecartement des Fabricants
Sens de déroulement de film.

become more brittle with age and are inevitably bent or flexed in use, the perforations have a tendency to split at the corners, which does not occur with the better designed 16mm perforation. The 9,5mm perforations shown on this drawing appear almost as rectangles. Only the special 2 x 1,6mm perforation used in the 3,2mm margins of the 35mm film have an indication of a radius at their corner (r ,15 I believe it says) which presumably must be taken to apply to all perforations shown.

Whilst I was completely opposed to Mr. Beauviala's "Super 9,5" scheme for a new gauge 11,66mm wide, which could never have benefited the amateur as he only intended it as a camera (Aäton) master for instant transfer to video, I am not in principle opposed to any improvement to the format as long as it is compatible with all existing equipment. As 9,5mm will increasingly have to be manufactured by the amateur movement in years to come whilst film is obtainable, I am inclined to urge those producing punches for perforating 9,5mm film in the future to adopt a different shape for the perforation. I believe the shape which would prove most hardy, whilst still performing correctly in existing equipment, would be the one shown in the accompanying sketch as it has no sharp corners to break or split. In fact I have a perforator with 12-slot Geneva movement which requires the punch and die to be replaced and this is the shape I intend to adopt for it.



Perhaps the optimum "fenêtre de projection" would nowadays be 7,5 x 5,7mm but projectors vary quite considerably. If magnetic stripe is not a consideration it could go to 8 x 6mm.

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CHAPTER EIGHT

The Mind Set

That 9,5mm cinematography is not considerably more popular — it is currently practised by only a handful of enthusiasts throughout Europe — has to be attributed to a number of myths and misconceptions, most of which apply to film making in any gauge. At the risk of preaching to the converted, since it would seem unlikely that anyone with no interest in cinematography would buy this book, it may be thought worthwhile to demolish the various arguments one hears from time to time in favour of abandoning ciné altogether.

1. "Surely it's far too expensive?"

With the cost of a filming kit of reasonable quality at under £100, this argument presumably refers to the running cost of colour film at around £10 per minute (depending on camera loading system). In the 1950s when Pathéscope Ltd. offered a charger of Kodachrome I film at 27/6d. (£1.37) and one had to wait two or three months for it to be returned from processing in France, this was a fair argument. The average industrial wage was then about £10 weekly and petrol cost a shilling a gallon. In the fifty years or so since then the average wage has increased by about thirty times, but the cost of a much superior colour film with fast local processing is only ten times higher than it was then. What other commodities can make such a claim? In real terms the cost of colour filming is lower today than it has ever been before.

2. "Yes, but video is so much cheaper."

If you believe that you will believe anything. Sure, the running cost of videotape is only a few pence per minute, as it ought to be. Anything recorded on it can be erased by a magnet rather quickly, and it will be unplayable after about twelve years even if stored under archival conditions. However, only the most short sighted would consider that the cost of raw material is the whole story.

For those who only wish to play their video recording through their television at full length, warts and all, and are satisfied with that (some are) then the videotape system may justify shelling out a thousand pounds or so for a camcorder. Let's face it, in the past there were many thousands of cinematographers who only used a splicer to join up their rolls of film as received from the laboratory and bored all and sundry with their projection sessions. It is probably just as well that such users have now turned to video, and waste rust rather than silver.

Meanwhile there are millions of people every day who shell out not inconsiderable ticket prices to enjoy the cinema experience. The appeal of this experience, once thought to be killed off by television, is on the increase with

new cinemas being opened everywhere. The number of feature films being made is also growing apace, fuelled of course by ever expanding television and video markets but nonetheless initially for lucrative cinema exploitation.

If the camcorder user wishes to replicate the experience of large screen projection his costs escalate astronomically. And if he wishes to carry out any editing they escalate much further. One is looking at a bill for four or five thousand pounds for the whole kit. It will be obvious, therefore that if we are to compare like with like, the running cost factor is just a small element in the equation.

3. "But video is so user friendly."

This can be affirmed at a superficial level. The camcorder is a seductively ergonomic lightweight plastic object which has an insatiable appetite for expensive re-chargeable batteries. But it offers instamatic cassette loading like a Super-8 ciné camera and has fully automatic functions which most of the time will yield good results.

If anything goes wrong? Well then it quickly ceases to be at all friendly to the user. The video projector has no moving parts except a cooling fan motor, but when its lamp fails you have to return the whole caboodle to the importer for a replacement to be fitted. As for the camcorder and video player, they are so complex and electronically sophisticated that once they are out of guarantee you will probably be advised that repair is uneconomic and you should buy a replacement. In other words they are a part of today's throwaway consumer society and it is assumed that once you have put a foot on this particular ladder you can never afford to jump off. You just go on shelling out.

On the other hand you could have a 9,5mm ciné camera still working fine after seventy years. Your projector will be slightly younger. Either of them can easily be fixed, probably by yourself, in the unlikely event of them giving any trouble.

Which of these alternatives really makes economic sense? Which can actually be called 'user friendly'?

4. "Surely video represents technological progress, which is inevitable?"

Everyone would prefer to be thought progressive rather than reactionary or stick-in-the-mud of course. But progress is not really an abstract concept. It must be possible to measure technological advance in objective scientific and economic terms. Can it honestly be argued that a projected videotape recording, which cannot stand comparison with the brilliance and definition of a 9,5mm Fujichrome image projected to the same size, but is obtained by use of equipment costing perhaps thirty or forty times more than a 9,5mm kit, represents progress in any sense of that word? The only 'progress' revealed is that it is possible to produce some kind of moving colour image without using ***film,*** provided the

Japanese electronics giants were prepared to invest billions of dollars in concocting a videotape recording system so complex and industrialised that the eventual user would have no input to the process beyond pushing the odd button and provided it could be marketed at a saleable price.

But from the user standpoint there are countless examples of manufactured products where the latest model certainly does NOT represent an improvement on its predecessor. More than likely the new model is just cheaper to make. One example in an allied field is the Leica M3 c.r.f. camera made between 1954 and 1966, a period which incidentally saw the production of some of the best 9,5mm cameras. According to John Holtz in his 1980 guide to the best photo gear called "In Focus" the M3 was and is "the greatest rangefinder camera, and maybe the greatest 35mm camera of all time." He goes on: "Even though now out of production, the Leica M3 remains a potent force in photography, and is still the first camera of many distinguished image-makers. The reason is quite simply that a Leica M3 camera body is the best possible piece of machinery to place behind a 50mm lens for general photography." The other models in this M series reduced the magnification of the viewfinder image to accommodate the field of an F35mm lens, which of course adversely affected viewing and rangefinder focusing for serious workers with F50mm lenses. Sometimes manufacturers try too hard. The point is that YOU, not they, must be the judge. If you are looking for a medium that will enable you to shoot, edit and present to the world your very own visual story, videotape cannot compare with 9,5mm film for simplicity, economy and quality. You know it makes sense, as they say. The last person you would want to consult on the latest 'improvement' in personal movie making is a salesman in this day and age.

The reason why "Making Better Movies", descendant of the much loved "Amateur Ciné World", ceased publication was that importers of ciné goods were no longer prepared to support it by buying advertising space. Sales of the magazine by newsagents were always a peripheral issue as the vendors took more than half the cover price. Eastman Kodak is still manufacturing ciné film in quantity but has declined to advertise its existence for several decades.

The current survival of 9,5mm owes nothing to big business, marketing hype or even the profit motive. It is due to enthusiasm based on common sense. It is like the emperor's new clothes. No dispassionate observer viewing a projected video alongside projected 9,5mm film could possibly pretend that the march of "technology" has yet caught up, but who dares say?

5. "With video you can take pictures in any lighting conditions with perfectly synchronised sound, which provides a realism that movie film lacks." This was also possible with the Super-8 Ektasound system (now withdrawn) but it did not result in the production of a single memorable prize-winning film. In professional film making other than television documentaries, a soundtrack recorded while the action was filmed is rarely employed, unless recorded under

strictly controlled studio conditions; even then the sync track will only be one ingredient of the final soundtrack.

6. "So you think we want to make professional films?"
There is no way you could. The cost of film stock is a tiny part of the budget for a professional film and the rest you could not begin to afford. Also making professional films is an obsessive, frenetic, almost addictive activity conducted by a large team of egocentric specialists in a commercial atmosphere. In business, time is money. Any professional film has to be made within a certain budget and time frame and aimed at what is perceived at the outset to be a particular paying audience.

So where does the amateur film maker enter the picture? Look at it from the end of the process. When we show our completed film to a non-paying audience of perhaps half-a-dozen souls, they will enjoy virtually the same experience as when attending the local cinema. The screen size may be smaller, but my home cinema has a silver screen 12ft wide and my nearest cinema runs to about 18ft., so the difference is not as great as it used to be in the days of super cinemas. The picture and sound quality should be just as good as the professional item. The difference lies in the subject matter, which can be entirely personal, a luxury which professionals may long for but can rarely attain. It goes without saying that when millions of dollars are involved in a project a personal vision is likely to be one of the first casualties of the system. In a century of cinema only about a dozen film makers, beginning with Chaplin, have enjoyed sufficient clout to override this committee process. But every amateur has that power. Unfortunately most do not know what to do with it. Even when they have sufficient experience to have mastered the technicalities and produce dependable results, they have only demonstrated a technical prowess, whereas making films above all calls for ideas and imagination. The best solution to this quandary may well be to find a friend who has those ideas, but who in all likelihood will have no interest in film making technicalities and will be content to leave that to you. It is a curious paradox that a visual art like the cinema first needs to be written out on paper. The chances of shooting a load of footage and then being able to turn it into a worthwhile piece of cinema are rather remote. One needs a complete mental conception of a film in one's head before loading the camera, which is not to say that better ideas that turn up while shooting ought to be ignored. This is not a challenge that every individual can rise to. Of course, just playing with ciné cameras and projectors can be a lot of fun in itself, which is more than can be said of a video recorder or projector.

7. "Cinematography sounds more like hard work than fun."
They say if a thing is worth doing it's worth doing well. If you intend getting anywhere with golf or fishing you will certainly need to put in much time, effort

and patience. Film making is no different and why should it be? Those who do it get great enjoyment from the process and to a large extent that has to be measured by the pleasure the result gives to others, since a film made for an audience of one is a waste of time. Film is primarily a medium of expression, for the amateur probably self-expression, so if you feel you have nothing you wish to express perhaps it is not for you. Many cinematographers are just hooked on the process and derive pleasure simply from using it, but if no-one else is going to view the result with enjoyment it can become a rather barren activity. At the same time, the fact that there is no production finance to be recovered does place the amateur in an essentially different position to the professional. He can take as long as he likes over filming and editing and, if at the end only a dozen people get to see the result, it is not an overwhelming tragedy, no-one is ruined. Though it will have involved hard work, you would not have undertaken it unless you found it was fun. The fisherman who caught nothing all day will probably not throw in the towel for good.

So then, is the argument won? It is certainly not one you will see advanced in any commercial publication, because they are driven PURELY by consideration for their advertisers. But you will come across it in the quarterly ciné magazines such as "International Movie Making", "9,5" and "Amateur Ciné Enthusiast", not to mention "Ciné 9,5 Revue" from Ciné Club 9,5mm de France. None of these publications will be found at your local newsagent, but they are available by annual subscription, and it is the subscriptions rather than advertising that keep them alive.

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CHAPTER NINE

The Supply Situation

Since the demise of cinematography as a popular hobby, the long ago proclaimed dead format of 9,5mm is hardly in a worse situation than any of the other gauges promoted in competition with it by Eastman Kodak. You cannot buy a new magnetic sound projector for any gauge, nor an animated viewer. The Super-8 Ektasound system is dead, likewise Fuji's Single-8 rival.

Processing of all Kodachrome is now carried out at Lausanne and takes 10 - 14 days. Single-8 Fujichrome is processed in Tokyo and can take months. But there are two laboratories processing 9,5mm Fujichrome in Britain and Photoworld has a very rapid turnround. New Era in Walthamstow employ a large continuous processing machine and understandably in the slack season this will not be worth activating until a number of orders have accumulated. There is also the Ciné-Dia laboratory at Epinay-sur-Seine.

In other words, from the standpoint of processing, which is a key ingredient of cinematography, 9,5 has survived to the point where it offers a wider range of emulsions than any other gauge with the most rapid processing service, a situation which would have been unthinkable thirty years ago. It has however been brought about through the unco-ordinated activities of numerous enthusiasts whose wish to prolong the life of the format is hardly guided by commercial cupidity.

For many years now the local photographic store has ceased to be a source of supply for most cinematographic requirements and the nine-fiver is not alone in having to depend on mail order sources. As we enter the twenty-first century the notion of shopping through the personal computer is beginning to take off as well.

The most obvious source of information concerning availability of supplies remains the ciné magazines, of which there are three of interest to 9,5mm enthusiasts. All are small A5 quarterly publications available to subscribers and containing both trade and classified advertisements:-

"International Movie Making" (the only one in colour) published by Roy Salmons, 29 Roumania Crescent, Craig-y-don, Llandudno LL30 1UN, at £12 p.a. (£14 overseas).

"Amateur Ciné Enthusiast" published by John Shearsmith, Porthallow End, Talland, Looe, Cornwall PL13 2JB, at £15 p.a. (£20 overseas)

"9,5" published by Group 9,5 for its members (annual sub. £8 + £2 joining fee). Contact Secretary: Ken Valentine, 29 Highfield Road, Bushey, Herts. WD2 2HD.

Some essential suppliers and their chief 9,5mm offerings are as follows:-

1. Photoworld, 7a Victoria Street, Llandudno LL30 1LQ (Telephone 01492 871818) sell process paid 50ft spools or 30ft H or P chargers of colour reversal

film and offer a rapid processing service for these lengths, empty chargers, spools, film cement, chinagraph pencils, lamps etc.

2. Grahame L. Newnham, 22 Warren Place, Calmore, Southampton SO40 2SD (Telephone 01703 865086) sells non-process paid Fujichrome Velvia, Provia and RTP64 in 100, 50 and 25ft lengths, also non-process paid b/w positive film in 50 and 25ft lengths. Also sells camera chargers and spools and projector reels up to 2000ft., reprints of obsolete instructions, leader and spacer. Also source of used and even unused 9,5mm equipment.

3. Buckingham Film Services, Fleece Yard, Market Hill, Buckingham MK18 1JX (Telephone 01280 816758) sell 9,5mm conversions of 16mm Eiki projectors, Bolex cameras and Muray Luxe viewer. Also source of used 9,5mm equipment and Agent for New Era 9,5mm colour (E6) processing service.

4. Larry G. Pearce, Lelant House, Royston Grove, Hatch End, Harrow, Middx. HA5 4HD (Telephone 0181 421 3666) sells 9,5mm spacer and used ¼-inch magnetic tape.

5. Ken Valentine, 29 Highfield Road, Bushey, Herts. WD2 2HD (Telephone 01923 242156) carries out re-lamping on Specto and most Pathéscope projectors. Also may have spare parts for obsolete machines.

6. Warton Parfitt, 101 Roston Drive, Hinckley, Leics. LE10 0UQ (Telephone 01455 616466) source of used equipment, lamps, reproductions of obsolete instructions, belting, camera chargers and spare parts.

7. Andrew Alden, 118-120 Upper Clough Road, Linthwaite, Huddersfield HD7 5PQ (Telephone 01484 840254; e-mail andy@2gfx.demon.co.uk) source of quality 'C' mount lenses, tripods and used pro gear.

8. Bristol Ciné Sales, 246 North Street,Ashton, Bristol BS3 1JD (Telephone 0117 966 6066) source of lamps and Q.I. 2-pin ceramic lampholders.

9. Lee's Cameras, P.O. Box 35519, London NW4 1YF. (Telephone 020 8202 9918; fax 020 8203 6684; email sales@lees.cameras.demon.co.uk websites www.leescameras.com and www.leescameras.demon.co.uk) source of used equipment and lamps.

10. Classic Home Cinema, 7 Taylors Avenue, Cleethorpes DN35 0LF (Telephone 01472 603089) source of stripe and adhesive, perforated magnetic ¼-inch tapes and former Cresta supplies.

11. E.v.T. Industries, Havenhurst, Ticehurst, Nr. Wadhurst, East Sussex TN5 7HE (Telephone 01580 200528) Laminated or paste magnetic striping service.

12. Cecil W. Cramp, 17 Bedford Road, Horsham, West Sussex RH13 5BL source of used projectors and Pathé memorabilia.

13. Laboratoires Ciné Dia, 55 Avenue Joffre, F-93800 Epinay-sur-Seine, France (Telephone 00331 4841 3625) source of Fujichrome, operator of Kodak-Pathé slitting and perforating machinery and professional processing laboratory.

14. Harkness Screens, The Gate Studios, Station Road, Borehamwood, Herts. WD6 1DQ (Telephone 0181 953 3611) source of ciné screens and material.

15. Gilbert Electronics, 35 Lower Road, West Malvern, Worcs. WR14 4BX (Telephone 01684 576988) for the Cresta Sim-Sync.

Equipment and supplies for the nine-fiver are also to be found at the Group 9,5 Get Togethers held in April at Pimlico and October at Chiswick. To a lesser extent equipment and supplies may also be found at the Derann Northern Film Collectors' Convention held at the Savoy Hotel, Blackpool, in March and November.

The Fujichrome film stocks have rather optimistic ISO speed ratings, whether used for ciné or still applications.

Fujichrome Velvia rated at 50 ISO should be exposed at 25 ISO (maximum) in ciné cameras. It offers resolution at least the equal of Kodachrome with higher colour saturation, which could be stated as higher contrast. Shadows have a tendency to render black without detail. It is balanced for daylight.

Fujichrome Provia, also balanced for daylight exposures, is rated at 100 ISO but should be exposed at 50ASA for ciné. With the higher speed comes reduced contrast with lower colour saturation and many ciné users prefer it for this reason.

Fujichrome RTP is balanced for artificial (tungsten) light temperature, but can be used in daylight through a Wratten 85 A-D filter. It is slightly more grainy than the other Fujichrome emulsions, but not objectionably so. In artificial light its rating of 64 ISO may be employed (40 ISO in daylight with filter).

Konicachrome is a daylight stock which can be exposed at 50 or 100 ISO (advise the lab which you have chosen). Whilst not offering the same saturation as Velvia, it has good definition and may be cheaper. The 100 ISO rating is quite genuine, making it the fastest colour film available for the gauge. A new generation emulsion is being introduced in the summer of 2002.

9.5

Magazine for the 9.5 mm cine enthusiast

No. 47

Autumn 1986



Group 9.5 member Douglas Macintosh using a 9.5 Ditmar camera with Hypergonar Cinemascope lens filming the 'Manx Victorian Railways'.

Photo. Douglas Macintosh

All these films are developed by the E-6 Ektachrome process.

Few 9,5mm projectors have ever handled colour film. The entire Pathéscope library, silent and sound, consisted of monochrome films and during the short periods when colour stocks were available to 9,5mm cinematographers high prices and processing delays ensured that few went in for the experience. The present day practitioner therefore inhabits a different era from the days when 9,5mm was the most popular user gauge, and can employ the most modern emulsions with the fastest available processing turnround of any ciné gauge. The really impatient can go in for home processing using the E6 chemical kits that are on the market; make sure to include the optional extra colour stabiliser to ensure as far as possible that the colours remain permanent. Russian LOMO bakelite tanks for 10 or 15 metres length films may be used provided the reel centre is changed for one of 9,5mm height, as they were designed for 35/16mm.

In black-and-white emulsions Kodak Plus-X is generally available, which offers fine grain but rather low contrast. The range of black-and-white Efke films lately offered process-paid by Photoworld combine good resolution with an extremely good contrast range.

If buying colour film without processing rights it will be found most economic to purchase 100ft reloads, even if one intends loading chargers. One of these will fill three 'P' chargers with only about a foot of wastage. If loading 'H' chargers the wastage will be more like 2 metres as they have lesser capacity. Ideally if one intends loading chargers the film should be wound on to a camera spool emulsion out and left to get used to it for a week or two before embarking on charger loading. For 'P' chargers use a disc of 47mm diameter to gauge the size of roll for insertion in the charger. This pattern is so easily opened that it is possible to load the roll in the charger with the take-up bobbin extracted, close the charger in the dark and place it on a carpet with the hole for the bobbin downwards. Then one can carefully trim the end of the film with scissors removing approx. 2mm from each edge for about 20mm so the film sits neatly below the spring of the bobbin with the light on. The bobbin can then be placed in the charger with the light off. As previously mentioned, for the 'H' charger the disc gauge would need to be of 43mm diameter and the removal of the charger lid will be found such a difficult operation in the dark that trimming the leader in the way just described will not be practicable; it will have to be done in the dark.

If it is desired to send a roll of film for development without its spool or charger, it should be carefully wrapped and sealed in aluminium cooking foil, which is opaque, cheap and plentiful. Remember to remove the take-up bobbin from the centre of a charger load, as the charger is useless without it.

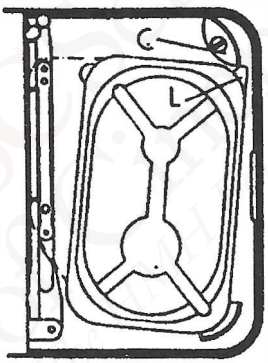
Before loading any charger always take a paint brush and clean out the interior, especially the upper and lower film channels, most thoroughly. When it is loaded check that you can pull the film easily from the feed slot without there being any tightness or strong resistance, which would indicate the roll is too large.

If you find it difficult to pull, the camera certainly will and trouble may be expected.

Colour reversal films require extreme precision in exposure and the use of an accurate photo-electric meter cannot be too strongly urged. With experience good results *can* be obtained by guesswork at least in straightforward lighting conditions, such as in bright summer sunshine. If in doubt always err on the side of over-exposure. A film which is under-exposed by only one stop may well be so disappointing as to be thought useless, whereas one that is over-exposed by a stop may be found quite acceptable: at least it may show detail in shadow areas that with correct exposure may render as black, and the colours will not be washed out, which would take two or three stops of over-exposure. Hence my recommendation, based on experience, that a stop no smaller than f/10 be used with Velvia in bright sunshine and f/5 in bright cloudy conditions (no shadows). After your first film you can make your own judgements, which may be slightly affected by the power of your projector lamp, type of screen and the size of picture you like to show. A silver screen surface will be found the most satisfactory: it has high reflectance with little directional effect. In cinematography image brightness is always a challenge due to the tiny gate aperture available for light transmission, and a simple white surface just gives no assistance. The silver plastic material known as 'Spectral 2000' sold by Harkness is excellent if properly tensioned.

And finally if you hope to view rock steady pictures like professionals turn in on 16mm, you will have to employ a rock steady tripod as they do.

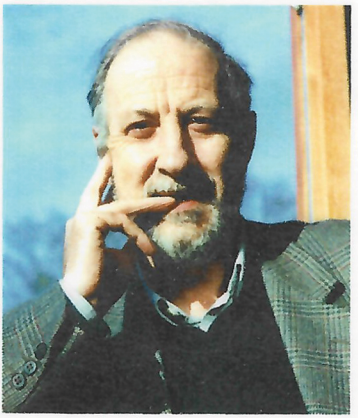
Happy filming!



Special note re De Luxe Motocameras

The lip on the H Charger (L) is inserted to the rear of clip (C) — see diagram.

Taken from a Pathéscope film leaflet, to show how the H charger suits all Motocameras



The author Douglas Macintosh was born in Southport in 1937 and now lives and works in the Isle of Man. His interest in 9,5mm began at the age of six when a school friend took him home and showed him a Felix the Cat cartoon with a Pathéscope Kid projector. At the age of nine he acquired his own Coronet IIa 9,5mm projector with a collection of classic films for Christmas. While at school at Shrewsbury he formed a ciné society and organised fortnightly film shows using various of the libraries that then existed. At fifteen he acquired his first ciné camera, the hand-turned Pathé Baby, bought in Blackpool for £4 with three chargers. Despite some official disapproval his ciné society produced numerous films, one in CinemaScope and another with synchronised tape soundtrack.

On leaving school he qualified as a Solicitor and took up a post as film copyright lawyer with the National Film Finance Corporation in Soho Square. When the Corporation ran out of funds in 1968 he became executive assistant to the Managing Director of Associated British Productions Ltd. at Elstree Studios. Meanwhile his friend Peter Whitehead was fulfilling every amateur's dream and, using the new 16mm technology developed for television, was getting his films such as "Wholly Communion" and "Tonite let's all make love in London" shown in West End cinemas. Whitehead invited the author to join him when he embarked on filming "The Fall" in America. In 1970 the author took over an ailing 16mm documentary film company in Soho, which involved managing four film crews and their equipment for making programmes around the globe such as the "Disappearing World" series while running five cutting rooms, a magnetic film recording suite and viewing theatre at base. Eventually this work led to the development of special miniaturised sound recording apparatus and in November 1977 the author moved to the Isle of Man to supervise the design and manufacture of the range of SQN battery portable audio mixers, which became the industry standard for location recording as soon as videotape took over from film around 1980.

Since the disappearance of commercial magazines for the ciné enthusiast, the author has been a regular contributor to "Vintage Cinema Gazette", "9,5", "Amateur Ciné Enthusiast" and "International Movie Making" and maintains an active interest in all sub-standard ciné gauges and the use of colour reversal film materials.