
THE
HISTORY OF THE
JAPANESE CAMERA
MONOGRAPH COLLECTION

COLLECTING AND USING
OLYMPUS PEN
SINGLE-LENS-REFLEX
CAMERAS

— PETER —
DECHERT

HCP

HISTORICAL CAMERA PUBLICATIONS

This Monograph

<i>is in Honor of:</i> Charlie Klein Stew Wagoner Joe Livengood Joe Wilson Harold Pough	<i>is Dedicated to:</i> Jim Drake Jimmy Purring Don DeFina Walter Holt
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With real affection.

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Introduction to this Facsimile edition

The Pen F book was originally written during 1988 and 1989. Although in it I did discuss all the models of the Olympus Pen SLR cameras, I wrote the book with the photographer in mind, with a great many observations on how to use and modify the cameras and various accessories and lenses, including ones from other systems, in order to broaden ever further the applications already included in the Pen SLR system itself by the far-seeing folk at Olympus. You may not believe it but in those days, almost two decades ago now, a great many people were devoted to single-frame 35mm photography, and many of them actually put their Pen Fs to effective daily use.

But the Olympus Pen F and its successors became, as it turns out, elements of an historically unique camera system: the only single-frame SLRs with exchangeable lenses. Indeed, the only single-frame SLR system, period. As a result, between when I wrote the book and today, almost everyone who prizes the Pen Fs has come to do so as collectors, not as photographers; and this monograph was not, I'm afraid, primarily aimed at collectors. While my book will not, then, fully satisfy most of today's Pen F-camera owners, it may nevertheless augment the knowledge that they can acquire elsewhere, especially from the following book:

John Foster, OLYMPUS PEN SLR HALF-FRAME SYSTEM CAMERAS, Biofos Publications, England, 2002.

You should be able to buy a copy of it from *CameraBooks.com* (or whichever other bookseller in your experience specializes in photographic books). And many thanks to all of you who over the years have asked me if my Pen F book would ever again become available. Here it is!

Peter

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PREFACE

Sometimes necessity leads to strange affections.

Consider my affair with the Olympus Pen cameras. I had picked one up in 1959, but more or less as a hands-on toy, not thinking that it would have any really practical application to my professional work.

About 1961 one of my university clients kicked off a \$46 million fund-raising campaign that involved numbers of alumni meetings all across the country. I was working pretty closely with them to provide photographic coverage, which included photo storeis in the alumni magazine as well as presentation pictures for people from far away as well as nearer to home.

We were talking of many major donors, potential or real, and we soon realized that not all of them were known to us Philadelphians by sight. When it came to captioning the photographs, or to picking out the picture of a single individual to be featured in one way or another, it looked as if we might find it necessary to waste a great deal of time trying to get someone who knew the folk that lived in some particular distant geographical area. Then we would have to arrange a mutually convenient time to inspect the contact sheets and pick out the desired person from among the total coverage, or to identify L-to-R everyone in three or four shots. There had to be an easier way.

At this point I recalled the Olympus Pen. It seemed to me that if I stood at the registration desk before each meeting and used the Pen to photograph each individual as he registered, we would later be able to correlate the photos with the order of registrations and come up with an identifying shot of each person who had attended each meeting; we could then use these shots to identify the alumni in the "real" photos that I made during the meeting's progress.

We tried it, and it worked. The Pen's 72-shot capability on a 36-exposure roll of film made the job easy, since normally fewer than a hundred people met at once. In time I replaced the original Pen with a Pen D with its f/1.9 lens; the lighting was not always what one might call superb where the registrars sat.

Well, if there were say ninety alumni at the meeting this meant that I still had most of the second roll of Pen D film unused when the real business began. Who wants to waste film? Not I! I began to make occasional grab shots with the Pen D when I didn't really think that the subject matter was such as to merit publication despite the fact that I found it interesting. And before long, as such things inevitably go, we found that every now and then we were using a single-frame shot in the magazine or elsewhere without any great qualms about its quality.

One thing inevitably leads to another. Before long I found myself sometimes carrying the Pen D as a tongue-in-cheek back-up and using it part-time on jobs that I considered ditzy, or even making pictures semi-seriously with it when inconspicuousness was a desired attribute. It worked: that was the main thing. But I felt limited by its single 3.2cm focal length, and it occurred to me that the mountain Olympus had not yet surmounted was to design a Pen with a long lens.

For a few weeks I experimented with an afocal front extender attachment, but it loused up the focusing and wasn't very sharp even after I finally managed to calibrate it. My Pen D still bears scars from this endeavor. As early as then there were rumors of a Pen SLR in the development stage, but from a practical point of view this was pie in the sky if you were in a hurry, and as my photographic friends will gladly confirm to you I am always in a hurry.

And then I received an assignment to do a number of classroom photos of various teachers teaching. I had Nikon Fs and Leicas and could so the series with them — an indeed many of the final shots were made that way — but the idea of an unobtrusive telephoto Pen grew and grew: I guess it became an obsession. Jim Purring and Don DeFina, who among other tasks were doing much of my darkroom work, were on their knees already hoping I'd forget about single-frame altogether; Jim Drake, my associate photographer, thought I was nuts. None of this mattered, of course, because the name of the business was Peter Dechert Associates, and I was the boss.

Thus, one quiet Saturday when there was no football game to be covered, I went to work with my hacksaw, miniature screwdriver set, pliers, Dremel tool, files, and (relative) innocence. By Monday morning, when the gang showed up for work, I had assembled the Tele-Pen out of my old original Olympus Pen, a Leica extension tube and body cap, and a 75mm Voightlander Color-Skopar f/3.5 lens in a Compur 1/500 second shutter.

Calibrating it was another matter, but in the end I managed to do so. I even made a number of photographs with it. Some saw the glory of publication.

Fortunately, not a great deal of time elapsed before the rumored Olympus Pen SLR, the original Pen F, hit the marketplace. I exulted. I bought two of them and all three lenses then available. I used them. When the system expanded, I went right along with it. This doesn't mean that I got rid of my double-frame and rollfilm cameras; I did most of my professional work with them, but the Pen SLRs were always ready, and often used when size, weight, or even just plain contrariness were major considerations.

Off and on, I have used them ever since. When you finish this book, you may understand why.

I. AN INTRODUCTION: SOME ASPECTS OF HISTORY

The Olympus Pen family of single-frame (also called half-frame) 35mm cameras was introduced in 1959 with the model simply called the Olympus Pen, a tiny, basic viewfinder-only camera with a limited range of shutter speeds and an f/3.5 lens.

The original Pen was the first offspring of a very gifted designer, Yoshihisa Maitani, to be produced by Olympus, the company that he had joined after finishing his university education. Neither he nor they has ever looked back. This very simple camera was the precursor of the single-frame wave that swept through the early 1960's and died prematurely, so far as I am concerned, because Kodak and too many other processors waited interminable years before making single-frame slide mounting available to those of us who responded with eagerness to the newly marketed but truly venerable format. The single-frame dates back to the introduction of 35mm cinematography, and was used by early 35mm cameras before Barnack and the Leica swept the scene.

Olympus, too, has a venerable past. They were one of Japan's early optical firms. After the second world war they made a few cameras, largely rollfilm folding models, which were very well done without being at all exciting. They also made lenses for many other camera makers: my faithful Mamiya Six has a 75mm Olympus f/3.5 of treasured quality.

The first Olympus Pen (it had no further model designation) signaled a new role for both Mr. Maitani and for Olympus, but this is a retrospective viewpoint. At the time, it was an interesting curiosity.

It had an F3.5 lens and a limited range of shutter speeds from 1/25 to 1/250. It lacked both rangefinder (focusing was by scale) and exposure meter. Settings were by guess or by god, otherwise named Weston, Norwood, Gossen, et al. Like all its successors it could make more than 72 exposures on a cassette of 36-exposure 35mm film. Though simple, it produced sharp negatives. In the next two years it was joined by such siblings as the Pen S, with an f/2.8 lens, and the Pen D, with built-in exposure meter (uncoupled, of course) and f/1.9 lens.

Thus by 1961 there were several Olympus single-frame cameras, all selling very well indeed. And many other manufacturers had landed on the single-frame bandwagon; there was a host of limitations and reconceived derivatives from people like Ricoh, Canon, and Yashica.

Even Leitz developed a single-frame prototype. And when they brought their camera to Photokina in order to show it off to the select few, they got a glimpse of another prototype called the Olympus Pen F and hurriedly hid their brainchild away. Eventually they eased it into their patent museum display, where today it arouses heartburn among Leicaphiles.

A decade later Maitani gained even greater international renown for the OM-1, which was arguably one of the three most brilliantly innovative camera designs of the 1970 decade. But when the prototype of the Olympus Pen F was first shown at the April 1963 Photokina, he was still only 30 years old. The tiny SLR prototype attracted immediate attention: if it ever reached production it would become the first single-frame single lens reflex camera.

In fact, examples for sale did not appear outside Japan for another year, by which time many photographers were anxiously waiting to buy them. I was one. As we have seen in the Preface, I had already been using the original Pen and the Pen D for some time in and around my professional work and, thoroughly pre-sold on the single-frame concept, and was impatiently ready for an SLR version by the spring of 1964.

When it arrived the Pen F was greeted enthusiastically in the camera magazines, and by many other photographers as well as myself. As a result of our sustained enthusiasm Olympus introduced two improved models in 1967, the Pen FT and the Pen FV. A Pen F Scientific Model, now most often called the Microscope Model, followed after, and was in turn succeeded by a short-lived Pen FT Scientific Model which is no longer often encountered. These are the five types of Olympus Pen SLR cameras that one finds today.

Kodak had had their own reasons to be very slow to install Kodachrome processing and mounting for the single-frame film size: they had just introduced the first Instamatic cameras and film loads, and single-frame cameras were directly competitive products. This competition was quite probably the single most important factor that ultimately quenched the single-frame enthusiasm of the 1960s.

Like many other devotees, when the discontinuation of the Pen F series was announced about 1972 I made sure to buy a couple of extra bodies, and also made sure I had most of the lenses that I thought I might need later. I have traded away a number of cameras in my career, but I have never since then been without several Pen SLR cameras.

I still use them. In 1981 on our first trip to Japan, I took with me two Pen FV's whose pressure plates I had modified in order to use the extra-thin Illford 72-exposure film loads that are lamentably no longer supplied. I came back with 900 negatives on just six rolls of film, including some of the photographs of arcane equipment that you can find in my *Canon Rangefinder Cameras* book.

Bob Shell and I were taking about the Pen Fs not too long ago. In his role as senior "Help" editor for *Shutterbug*, Bob had been getting quite a few inquiries about the cameras, how to use them, and what the components of the system are. I volunteered — it took no persuasion at all on Bob's part — to go to work

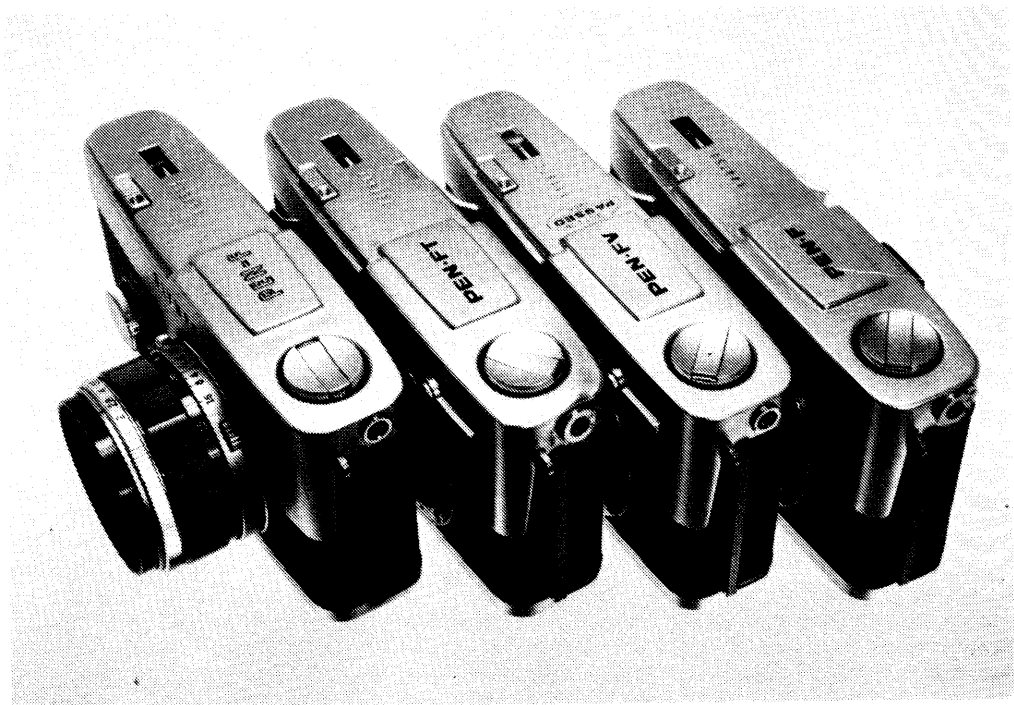
on a series of articles about the Pen SLRs for the magazine. When I had finished them and sent them off, I found I still had a few more thoughts on the topic.

Thus this essay. To build it, I fastened my added thoughts onto the framework of that six-article series. To begin with, we shall discuss the five types of cameras, and go over the lenses and accessories. In general, the following parts will deal with the format, and later some ideas about how to use the basic Pen SLR system. These sections should be helpful to collectors as well as to users, actual as well as prospective.

The rest is primarily for users. Succeeding parts deal with making a personal choice for personal use among the available models, and setting up that choice for rewarding as well as convenient photography. Last, taking off from the question of what adapters and such will allow the use of other makers' equipment, I shall go on to suggest how you can make some rather more functionally advanced adapters that will allow the system to meet your own needs for today and even for tomorrow.

Again, I want to thank Glenn Patch and all the staff at *Shutterbug* for making the pages of that splendid journal available to me and my peripatetic column, "The Dekkam File," wherein much of this material first appeared. "Dekkam," to answer a question I am sometimes asked, stems from the fact that the "ch" in the middle of my name has a hard pronunciation: "Dekkam" runs together the words "Dechert Camera."

The departure of the Olympus Pen SLR camera system was lamented by many at the time; most of us still regret that day. Those were simple, straightforward cameras that did their job extremely well, and still do for the few among us who continue to exercise them. Join us . . .



Four different models of the Olympus Pen F series of SLR cameras.

II. THE PEN SLR CAMERA SYSTEM

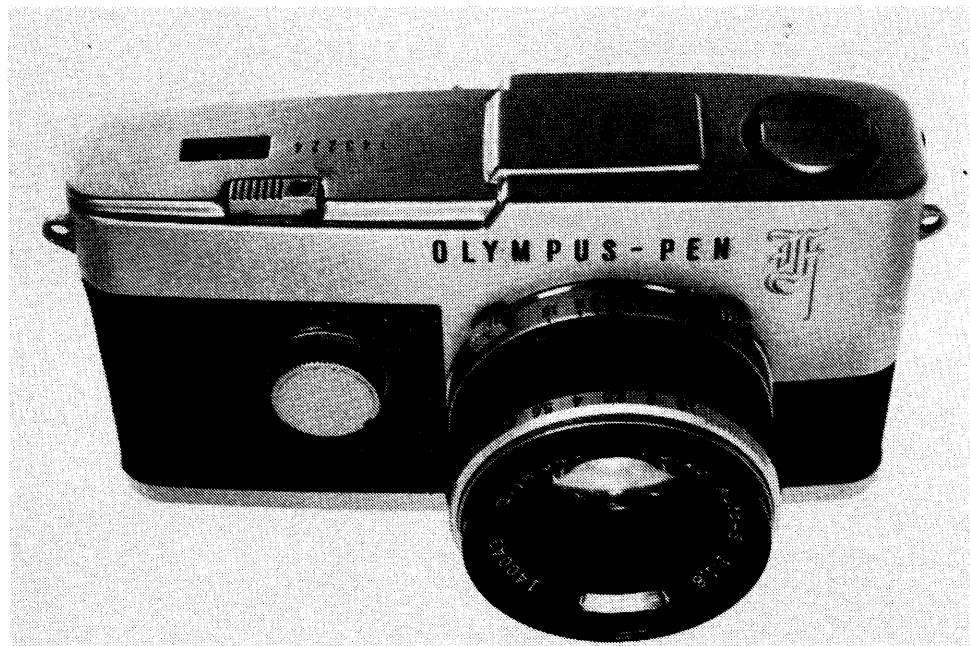
The Cameras and Their Topography

We have seen that there are five models of the Pen SLR, in order of arrival the Pen F, Pen FT, Pen FV, Pen F Scientific Model, and the Pen FT Scientific Model. All share a number of characteristics.

Pen SLRs accepted lenses in a uniquely Pen three-claw bayonet mount; lenses were aligned with the camera flange by matching red dots, and mounted by a 45 degree turn counterclockwise. This was only one of many similarities between models; it is by their differences that we know them. As we progress through a discussion of Pen SLR topography, these small differences will become clearer.

The Pen F, the first model sold, made the reputation of the Olympus Pen SLR camera system. Every collector of miniature camera designs should have a specimen on his shelves. Nevertheless, for current users it is the least desirable of the four for several reasons. Most important, maybe, as the oldest version examples of this model are likely to have seen the most use, and to have fewer good photos remaining in their life expectancy.

The Pen F, like its successors, had lever wind film advance, but the Pen F requires two strokes to complete the wind-advance process while the later models work with a single flick and have an improved mechanism which, in my experience, is less likely to jump an occasional cog and then require a minor readjustment in order to work happily. On this count alone, the later cameras are worth the increased investment now required to buy them. I should quickly add here that just about any Pen F-type in really excellent cosmetic and working condition will cost you more to acquire than it cost in the store a couple of decades ago, but the original Pen F is certainly nowadays best thought of as a classic collectible.



The original Olympus Pen F, the only model with the fancy scroll "F" on its front and open lettering on top, with 38mm f/1.8 lens.

All Pen SLR models have a rotary metal focal-plane shutter speeded from one second to 1/500 plus Bulb, with a speed dial on the right front face of the camera as you hold it ready for use. One of the beauties of this type of focal-plane unit (which in concept is quite like the shutters in most motion picture cameras) is that it will synchronize with electronic flash at all speeds, even 1/500. The shutter mechanisms of the later Pen SLR cameras are similar to that of the model F, but slightly more refined in detail.

The shutter dial itself has a forward rim with serrations that attach to an accessory exposure meter which can be mounted on all models but the Pen FT and its associated Scientific Model. The shutter release on all is a rectangular push-tab set flush into the top front face, above the shutter dial; the tab is serrated on the right and has a cable release socket at the left end. The self-zeroing frame counter is under a rectangular window on the top deck, behind the shutter release.

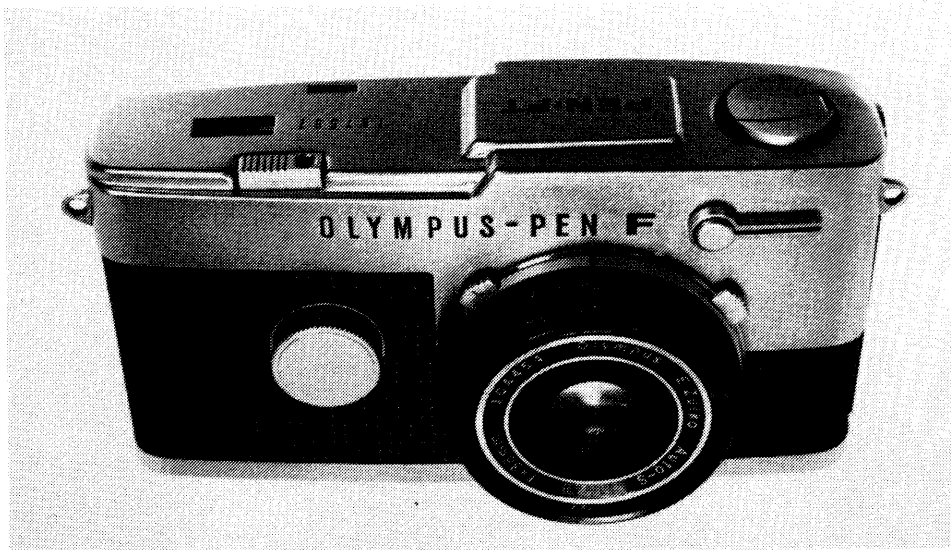
The rewind knob and folding crank assembly retracts almost flush at the top left end of all models, and when pulled fully out against spring pressure it unlocks the camera's backdoor. The flash outlet is on the top left edge of the body, just beyond the rewind assembly. The Pen F and FV are synchronized primarily for electronic flash, and disposable bulbs can be used only at the slower shutter speeds; but the FT and Scientific Models have a switch concentric with the PC socket that allows use either of M-type bulbs or of electronic flash at all speeds. Focal plane bulbs should not be used at speeds faster than 1/60 on any Pen F — that is, if somehow you have a supply of these archaic remnants.

The wind lever is a flat horizontal strip of metal recessed into a slot at the right rear of the camera immediately below the top cover plate; potential entry of dust into this slot is perhaps the major conceptual design flaw of the Pen F series. The lever of the Pen F is only about 1.5 inches long and is pivoted short of the end of the top plate; the later models have a longer lever and slot with the pivot at the center of the camera's right end. Both styles of lever have an upright tip with a curved end to make them easily located with the camera at eye level. The levers should be allowed to spring back to the flush position before the shutter is fired; on some early Pen Fs it is absolutely necessary to permit this action to take place if you are not to jam the mechanism.

The eyepiece of the Pen SLR cameras is not directly behind the lens, but slightly offset to the left. This fact results from the unusual reflex assembly, in which the internal swinging mirror has a vertical pivot at the right edge of the shutter frame cut-out. The mirror thus swings like a door, and the viewing screen is in the right vertical face of the mirror box. Its image is reflected from that position to the eyepiece by an assembly of two prisms, neither of which is a pentaprism, with a single intervening mirror which is semi-silvered on the Pen FT and FT Scientific, but completely reflective on the three other models. Pen SLR cameras have no peaked top bulge. The several times re-reflected route of the finder image makes it somewhat dimmer than might be hoped, but except in the FTs it is still bright enough for almost all occasions.

On all models film loads from left to right after the hinged backdoor has been opened. The take-up spool of the F has a single slot, but loading is straight-forward and simple; in the other models the spool has multiple slots, making the process even easier. I have had no problems with film flatness in any version. In practice about 75 exposures can be made on a nominal 36-exposure film load. The visible areas of the thin metal shutter disc are silver, and strengthening indentations are embossed in its surface.

The film rewind button is set into a depression in the baseplate, and locks when pushed inward. Some buttons are chromed; most are black plastic. On the Pen F the tripod socket is at the right end, as in the bottom-loading Leicas; on the later models it is slightly left of the center line of the lens, toward the left end of the baseplate, and there is a circular battery well with the coin-slot cover at the right end of the FT-type baseplate where the F tripod socket had been.



The Pen FT with the very shallow 38mm f/2.8 compact lens. The FT is the only Pen SLR with built-in exposure meter, whose illumination window is the small rectangle back of the shutter release tab and serial number.

The FT and FT Scientific are the only models with an integral exposure meter, thus the only ones that require battery power. Their meter is a moderately sensitive CdS unit that reads through the lens, as was just noted, by bleeding light from the finder system. This situation results in making the two FTs less usable in low light than the other versions of the Pen F: the necessary semi-silvered rather than fully reflective surface darkens their finders, making it somewhat harder to see through in dim lighting conditions.

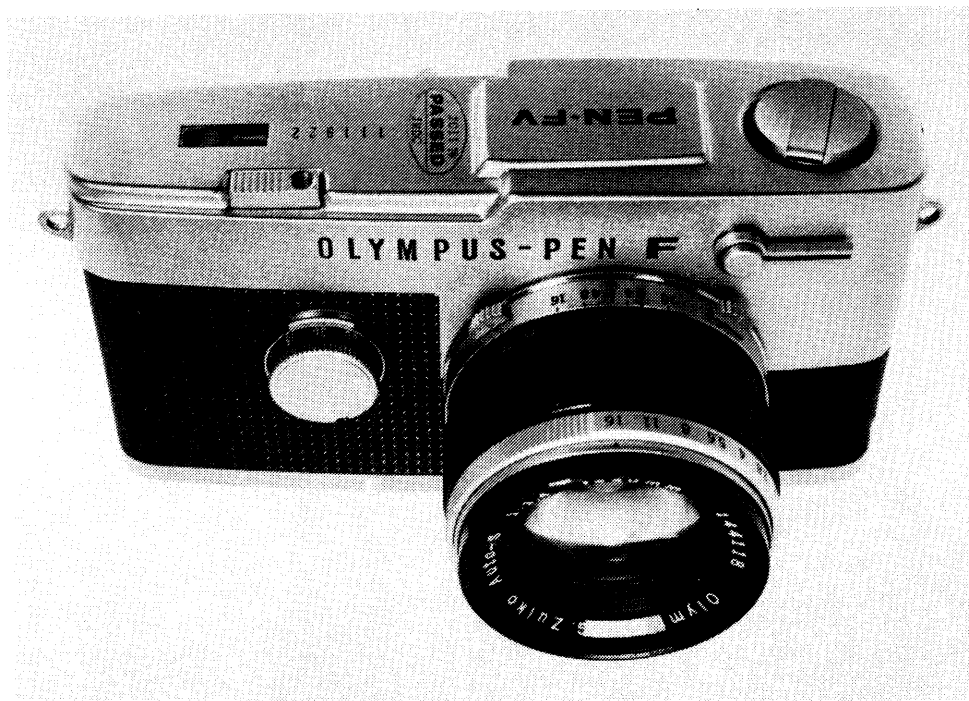
A small frosted glass rectangle inset in the top plate of the FTs just forward of the wind lever tip provides the only illumination for the meter readout scale within. the FT meter reads out on a numerical scale outside the finder frame's left edge which corresponds to a second scale on the F-stop ring of what are sometimes known as "FT" lenses. Lenses made for the older model lack this second scale. Metering can be done at full aperture or by the stop-down procedure, despite the fact that there are no indexing linkages between lens

and camera. The FT meter is, of course, coupled to the shutter dial, and an ASA window with a limited range of values between 25 and 400 is also incorporated in the dial and set by pulling out the serrated end disc of the dial and rotating it until the proper index appears behind the window. The metering in the FT Scientific Model is anachronistic; because of the idiosyncratic readout, it is useless when used through the optical system of either microscope or telescope.

The Olympus Pen FV is a Pen FT without the integral exposure meter. Our bonus is a much brighter focusing screen. The original F focusing screen had been a plain groundglass, but the FT and FV screens included a central micropism circle for better focusing ease. Although the micropism never fully darkens, it is nearly impossible to use for focusing at openings smaller than f/4.0 or f/4.5. Screens are not exchangeable without a major camera disassembly by a knowledgeable repair person.

Both FT and FV have one additional control, a delayed action lever at the top left front face of the camera body. The delay is about ten seconds; in use the lever is armed by a quarter-turn counterclockwise and released by pushing down the button in the hub of the assembly.

Delayed action was omitted from the Pen F Scientific Model, which is otherwise basically a Pen FV with Pen FT flash synchronization. Its focusing screen, however, is a non-ground glass circle: this provides an aerial image, and the only focusing facility is a set of one horizontal and one vertical engraved cross-hair, each of which bisects the circle, dividing it into equal quarters. The corners and edges of the screen are blacked out beyond the circumference of the plain glass, although the film frame of the camera is the usual 18x24mm rectangle. Without a screen replacement, the Pen F Scientific Model is essentially useless to a generalist photographer.



The Pen FV, probably the best "user" Pen SLR for today's photographer, but not easy to find.

The Pen FT Scientific Model was really simply a black Pen FT with the Pen F Scientific Model focusing screen installed and the delayed action removed. A round black plug was inserted into the top cover shell of this obscure model in order to blank off the hole through which the delayed action arm mechanism protruded on the standard FT.

The original Pen F had a very fancy scroll "F" engraved on the left front face of its oddly shaped top cover plate, just right of the lens as you look at the front of the camera and immediately after the "Olympus-Pen" legend. On top, on the very low finder bulge, it was further identified as the "Pen-F" in engraved open block capitals, and as is the case with all models its serial number appeared next to the film counter window.

The later versions had a simpler block legend "Olympus-Pen F" on front, without the very fancy additional "F", and the model-identifying "Pen-FT" or "Pen-FV" on top. The first Scientific Model's top simply reads "Pen F" in solid block letters; this fact sometimes leads the neophyte Olympus Pen addict to conclude incorrectly that this must be the early Pen F version. A glance through its finder is enough to correct such an impression. Similarly, the FT Scientific Model could be taken for a normal black FT at first glance.

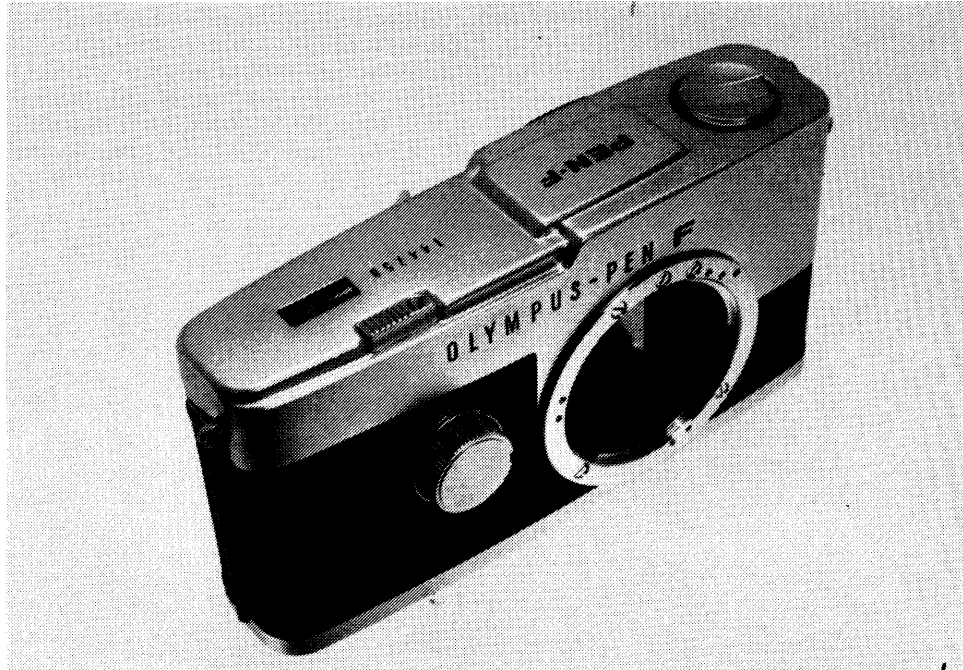
The FT was easily available with a black paint finish, and a good many examples were made; most have been pretty well worn by now. The FT Scientific Model was clearly a variant of this all-black design. I do not know of any black FV cameras, however; and I doubt that there were any black original Pen F models made for general sale.

Appendix A contains specifications for each of the five Pen SLR cameras, with some notes about their special features. It may be useful if you want to determine exactly which one is best for you to use. So far, however,

I have found no source for information on the exact number of each that was made.

Apparently, nonetheless, each of the non-Scientific models was numbered starting at serial 100,000; from the numbers I have noted in passing, it seems likely that production of the F may have run close to 175,000; of the FT, as many as 350,000 or more; perhaps even fewer than 45,000 Pen FVs; and apparently roughly the same number of the Pen F Scientific Model, which may have had its own 100,000-start sequence. The black FT Scientific is probably the scarcest of all, and apparently shared its serials with the normal sequence of FT cameras.

Please don't take any of these figures as gospel, but they suggest that in total not more than 700,000 of the four versions, taken together, were distributed worldwide. Still, for the mid-1960s to early 1970s, this is a very respectable showing, and it demonstrates widespread public acceptance of this camera and format. The Pen F series really established Olympus' reputation around the world for first-class camera design.



The Pen Scientific Model, also called the Microscope Model. Note that it has no delayed action release on its front face, and the "Pen F" lettering on top is solid rather than open as on the original Pen F.



The Olympus Pen FT Scientific Model, with black insert in delayed action hole.

The Pen SLR Shutter Design

It is not generally appreciated how complex the conception of the Pen F shutter was. Mr. Maitani first showed his design skills, amounting to art, in this camera. The shutter disc itself is a single chopped-out circle of thin dimpled titanium with an arc of about 200 degrees, like a pie with about three slices removed. In order to reduce mass and its inertial component, the arc's diameter is minimal; and the metal is therefore shaped with two slight circumferential bulges that allow it, when at rest, to block light from the upper and lower left corners of the film opening as viewed from the back.

Since there is only one disc, rather than two as was the case in the pre-war single-frame Univex Mercury models whose shutter design was also based on that of a cine camera, the shutter can run freely only at its highest speed, 1/500. On the Mercury, with two discs, speed could be partially controlled by varying their relative positions in order to shape gaps of different sizes between them, a solution comparable to the traditional cloth focal-plane shutter design where speeds are partially controlled by varying the width between the first and second shutter curtains.

In the Pen SLR design, all speeds slower than 1/500 have to be governed by a delaying mechanism that brakes the shutter disc momentarily while the film opening is uncovered, then releases it once more so that it can complete its 360 degree rotation. Spring pressure on the shutter is constant, not variable, and the disc therefore moves at only one velocity for all exposure settings. In order to control the speeds with sufficient accuracy, and also in the interest of reducing overall wear, there are not one but two delay mechanisms. The first operates in the range between 1/60 and 1/250; the second joins in to regulate the slow speeds between 1/30 and one second. In a later section we shall return to this topic in order to see just how accurately all these mechanisms work together.

The shutter assembly is linked to that of the mirror and aperture stop-down lever, and the shutter will not fire until the mirror has sprung out of the light path. Mirror and aperture lever, in turn, are closely linked together and move in unison. The camera is so esthetically delightful to behold that even a seasoned Pen SLR user is often not aware of the complexity that it contains and the elegantly simple solutions that Mr. Maitani devised to bring order to that complex conception. And the inner mechanisms are largely modular; many repair operations are not overly time-consuming. Each of the five models is delightful to use, so long as some previous clot of an owner has not abused it.

As we progress, we shall discover more reasons for this pleasure. Now that you know something about the camera and its five variations, however, we shall discuss the lenses and systems accessories. By the end of their currency, the Pen SLRs had quite a few of both!

III. PEN SLR LENSES AND ACCESSORIES

The Lenses

All models of the Pen SLR share the same lensmount, a three-claw bayonet. The only signaling device between camera and lens is the automatic close-down linkage: a small flat pin that protrudes from the bottom rear face of the lens and an actuating lever that moves across the bottom of the camera throat. Pen SLR lenses are sprung to remain wide open at the rest position; the linkage acts positively to close them down.

Only three lenses were introduced in 1964 with the original Pen F: a 38mm f/1.8, 100mm f/3.5, and 50-90mm zoom f/4.0. All three received rave contemporary reviews, and were excellent optics for their time. They still hold up remarkably well, but since they are not multi-coated they do not have quite the contrast that we hope for today. The same is true of many of the later lenses as well; so far as I have been able to determine no Pen SLR system lenses ever were multi-coated. Use shades as a routine procedure on all Pen F and FT lenses.

One suspects that Maitani and the Olympus sages were waiting to see how the wide world received the Pen F before making the commitment to a full set of optics, because it took several years before the range was greatly expanded. The first wideangle was a 24mm f/4.0, but even this took some time to appear.

It is not necessary to try to determine which lens came out in what year. Suffice it to say that by the end, in 1972, a very nice choice of lenses indeed was available to the Pen SLR enthusiast. Some were produced in very limited numbers (the 800mm f/8.0 is surely the scarcest) and are very hard to find if you want to acquire a reasonably complete set. Others, of course, are common as dirt.



Some of the Pen SLR lens family. In the center is the 70mm f/2.0, surrounded (clockwise from the front) by the 20mm f/3.5, 25mm f/2.8, 50-90mm Zoom, 150mm f/4.0, 100mm f/3.5, and 25mm f/4.0.

The discussion that follows will simply serve to illustrate the complete range, had you been able to acquire it. Further details about each lens type can be found in Appendix B.

First of all, the wideangles. In a sense, this is the Achilles heel of the system: even by then-current standards, none was really, truly wide. The widest is the 20mm f/3.5, a fairly late arrival and not too common; it is roughly the equivalent of the 28mm focal length on a double-frame SLR. Then, in focal length, came the 25mm f/4.0, quite easy to find, and the much scarcer 25mm f/2.8 which was introduced late in the sequence. This was the sum total of wideangle lenses.

Now to the "normal" focal lengths, which Appendix C demonstrates are actually slightly longer than we might consider to be normal today. The 38mm f/1.8 was there from the beginning and is the most common Pen SLR series lens from any viewpoint. There was also an early 38mm f/2.8 lens, which was almost the same size as the f/1.8.

Much later came the so-called "pancake" version of the 38mm f/2.8 lens, a much thinner optic that added only a few millimeters to the camera body's thickness. This lens did not appear in great quantities, and is now much prized by both collectors and users. The 40mm f/1.4 can be found quite readily; the 42mm f/1.2 is scarcer. All four of these choices are good user lenses; I prefer the 40mm f/1.4 and the next lens to be discussed.

This, perhaps least-known of the normals because it was produced so late in Pen F history that it is not included in most of Olympus' summary lens lists, is the 38mm f/3.5 macro lens, which gets down to a 1:2 reproduction ratio. I found this lens immensely useful on that trip to Japan, where I wanted to photograph details of some of the rare and exotic cameras that I was fortunate enough to see. A good example of the macro lens is, however, very hard to find today; and when you do locate one it is likely to cost you a bundle unless you know more about it than does the seller.

Short telephotos included the 60mm f/1.5 and the 70mm f/2.0, both of which are obviously useful in low-light situations and are very respectable optically speaking. The 60mm seems harder to find than does the 70mm, but neither is particularly common. Longer teles are the 100mm f/3.5 and the 150mm f/4.0, the first very common and the second a good deal less so.

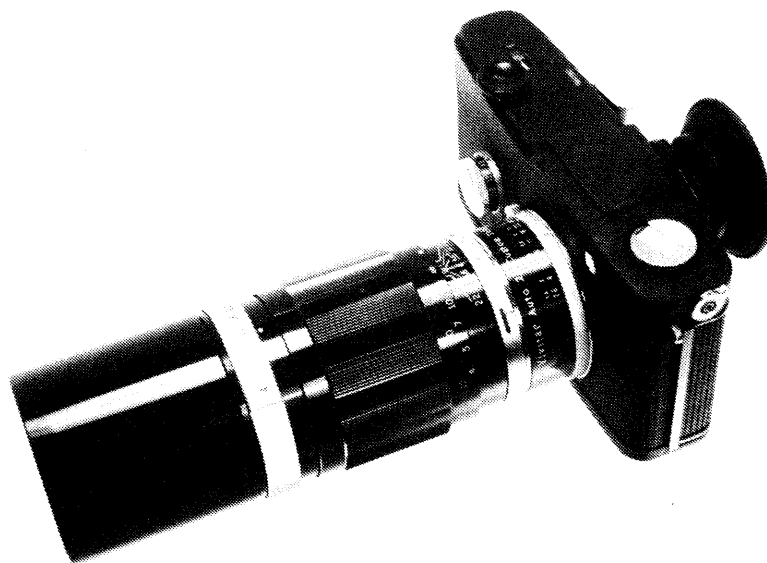
All three really long telephotos are scarce. They include the 250mm f/5.0 and 400mm f/6.3, which were standard refracting glass optics. I doubt that more than several dozen of the 400mm lens were manufactured, but the truly esoteric lens is the aforementioned catadioptric 800 mm f/8.0, a mirror optic of which probably fewer than one dozen ever existed. It is a very odd fish indeed, with the usual fat mirror housing grafted onto a rear section that looks like a 150mm tele lens all by itself. If you ever find one of these on a scrap heap, you are on the way to making a fortune from fellow Olympus collectors unless you decide to keep it for yourself. But you aren't likely to have such a friendly neighborhood scrap heap.

There were also two zoom lenses in the system, the 50-90mm that we have already mentioned, and a 100-200mm f/5.0 for the longer-range fanatics. The first, having been in the array from the beginning, is easy to find, and the longer alternative can be located after some effort if you really want it.

Should you be curious to know how many elements there are in each lens, the letter in front of the word "Zuiko" on the escutcheon ring will tell you. It is a simple progressive code: A stands for 1, B for 2, C for 3, and so on. The standard 38mm f/1.8, for example, is an "F-Zuiko": this means that it has six elements.

Olympus never issued a tele-converter for the Pen SLRs, but at least one independent maker produced such an item. Mine is labeled Vivitar, and is a standard 2x unit, apparently with four elements, that does a reasonable but not outstanding job. It retains the automatic aperture stop-down coupling between camera and lens. I believe that it also appeared under one or more other commercial names.

I seem to recall having seen an advertisement for at least one non-Olympus zoom lens for the Pen F series, but have no idea how common it was nor whether or not others were ever made. If so, they are all unusual today.



The Vivitar 2x Tele-Converter mounted between the 150mm f/4.0 Olympus lens and a modified Pen FT.

System Accessories: A Short Note

By its demise in 1972, the Olympus Pen SLR system had become quite well accessorized so far as the basics were concerned, although by the standards of folk like Nikon the system was still far from complete. In addition to the usual carrying cases, filters, and lens hoods, which we shall not examine in any detail, and the clip-on exposure meter that we shall meet later, an appealing if abbreviated range of original equipment accessories were available. Interestingly, most were designed for close-focusing, copy, and scientific applications. We shall examine the most useful and usable of them here.

There is definite evidence that as the Pen SLR cameras gained consumer acceptance and attracted the interest of professional and specialist users, Mr. Maitani and Olympus' other designers spent extra time and thought on improving the system's quality and utility. This can be seen in the number of accessories that were redesigned: in every case, an initially satisfactory but mundane design was superseded later by a more elegant one.

Finder Accessories

This redesign for improvement tendency can be seen right away in such a small detail as the accessory shoes provided for the Pen SLR system. There were two of them. Both clip onto the finder eyepiece frame, but the early one does not center the accessory on the lens' axis, while the Model II accessory shoe does. Unfortunately, however, neither of them is really sturdy enough to anchor an electronic flash unit dependably.

The accessory shoes were only the beginning of a comprehensive array of finder accessories. There was also an eyecup that included a facility for mounting correction lenses; this obviously could not be combined in use with either model of shoe, since both accessories had to be mounted onto the same eyepiece frame, which of course could hold only one at a time.

Other viewfinder bits and pieces included a straight magnifier, a right-angle magnifier, and a right-angle finder. These all clipped onto the finder frame, and thus they too could not be used in combination with the accessory shoes. Their main purpose was for specialized work.

The two right-angle units, both very well made, are the sorts of things that are very useful with any SLR whose finder is not exchangeable. They are used most often when working with devices like a copy stand, where the camera sits at near eye height, and one finds it difficult to look over the camera body and down into the finder. The right-angle magnifier would be especially useful with the Scientific Models on a microscope, using the camera's cross-hair focusing facility. The plain right-angle finder might be more useful in a copying set-up, or equally in another photographic area for picturing subjects or at very near to ground level.

The straight magnifying finder's main application might be with long lenses and the camera mounted onto a tripod, but it would also be handy with a Scientific Model adapted to a telescope eyepiece. It is not something that is very useful for general photography, since it does not cover the finder's entire field of view.

Close-Up Accessories

In addition to these three special finders, there was a further very considerable range of accessories that, as mentioned earlier, were presumably designed primarily for copy and close-up work. Most could usefully be combined with the Pen Scientific Models in order to do some quite exotic things in the medical and research fields, but they were equally at home in combination with the more mundane versions of the Pen SLR.

Possibly the least rewarding of these in actual use was the set of extension tubes, which came in a small black leather case whose soft sides were secured by a button catch. Since the design of the Pen SLRs required that the lens dismounting tab and its associated locking hardware be on the lens rather than on the camera body, the tubes cannot be firmly affixed to the camera. Because of their narrow design, they lack the locking catch. The rear tube by itself is only 4mm deep, leaving no room for the lens lock hardware.

There were four pieces in a set, two adapters and two tubes. The rearmost adapter has a male flange at its back to attach it to the camera, and a 50mm diameter threaded socket at its front. The short intermediate tube is threaded at both ends, 5mm long, and can be left out of the array in order to shorten the total length of the extension. The longer intermediate tube is threaded in the same way, but its length is 10mm. The front adapter is threaded at the rear and has a standard body flange at the front, into which a normal Pen SLR lens can be bayoneted and locked.

There are thus four possible extensions available with a single set of tubes: the combination of all four, giving an extension of 21mm; the front and rear adapters without the intermediate tubes, giving an extension of 6mm; and intermediate lengths of 11mm and 16mm using the short or long double-threaded rings individually between the two ends.

It is my view that today the best basic use to make of a set of tubes is to look at it as a source of adapters to mount lenses onto one of the bellows units, if your photographic adventurism tends in this direction. Using the rear tubes as the adapter itself, each of the two forward rear-threaded ones can be shaped to hold an enlarging lens or whatever choice you might make for near-focus or other special photographic work. Apart from adjusting the diaphragm of your adapted lens you will not often be coming into contact with it, and the lockless adapting extension tube is likely to hold it in place as firmly as is necessary.

In addition to the extension tube set, Olympus also provided a set of 43mm close-up lenses, which were mounted on the front of any lens with a 43mm front flange in order to extend its close focusing range. This type of accessory has gone very much out of favor in recent years, but in fact a good supplementary lens can often produce entirely acceptable results. And with some optics of unusually intricate multi-element design, the accessory lens approach often results in sharper images than those gained with tubes.

Reverse Ring Lens Reverser

Although Olympus gave this accessory that name, it is in fact two rings. The rearmost, with a lock, attaches to the camera's lensmount and has a front clamping device which holds the outer front rim of any Pen SLR lens with the standard 43mm threaded front flange. While the clamp provides a fairly firm attachment, it is not as secure as a threaded flange would have been; on the other hand, it does allow orientation of the reversed lens with the scales at any angle, an asset to easy use of the reversed unit.

The other ring bayonets onto the rear flange of the lens, which actually is the front of the unit as assembled. It has two purposes. The first is to close down the diaphragm of the Pen lens to its selected aperture. Since the lenses are sprung to remain open until positively closed, this is a vital function, performed by means of a well behind one of the mounting tabs in the flange.

The second purpose is to allow mounting 43mm filters and shades onto the reversed lens. This front tube is actually shaped like the front end of a normal lens, threaded for filters and lipped for a clamp-on shade. It is engraved, for all the world like a regular lens, with the statement "Olympus Pen F . . . Reverse Ring . . . Made in Japan." With this ring and a shade mounted on the assembly, one needs to look twice or thrice before realizing that the lens has in fact been reversed on the camera. Of its type, it is an exceptionally well thought out accessory indeed.

By combining the Reverser with either of the bellows units discussed next plus one of the lenses between 38mm and 100mm focal length, a very useful range of macro and micro coverage could easily be obtained by the owner of either a Scientific Model Pen or a more mundane example of the breed. Mounted by itself with a lens, the focusing range covered by the Reverser was very narrow, and unless you happened to have a lens of exactly the proper focal length you were likely to find that it was nearly impossible to create exactly the photograph that you wanted to achieve.

Bellows Units

In yet another case of redesign for greater flexibility, Olympus issued two sets of bellows units for the Pen SLR family. The early model is simply marked "Olympus-Pen F." It is a single-rail unit with bellows about 50mm square, and accepts a single-rail slide duplicating front bellows attachment. The front standards of this bellows is rigidly attached to the rail; only the rear standard can be focused by a wheel on the left. There is a position clamping ring, looking like a second focusing wheel, on the right. The camera body can be located either horizontally or vertically and locked into the chosen orientation.

The later bellows, clearly labeled "Bellows 2," is an altogether more sophisticated unit. It has two rails: the one on the right with a focusing track, the left one for extra rigidity. The focus wheel is on the right side of the unit, and a clamping arm lock is opposite it, working on the left rail. The bellows itself is ten millimeters wider than its predecessor, at 60x60mm: it thus reduced the likelihood of internal reflections from the edges of each fold, and also appears to be made of stronger, more durable material. Both front and rear standards can be moved and locked into place, although only the rear standard is geared for focusing. As was the case with the earlier unit, the camera can be rotated between horizontal and vertical alignments and locked firmly anywhere within this 90 degree range.

A second "slider" set of twin rails could be bought as an accessory and attached to the bottom of Bellows 2 in order to allow unit focusing after a specific reproduction ratio had been chosen for one's subject matter. The runner on the slider block locks with the same sort of arm used on the main rails of the bellows. A twin-rail slide duplicating front assembly was also made available.

Bellows 2 was clearly a distinct improvement over the original model, in flexibility as well as sturdiness. It has only one drawback: the lens unlocking tab should have been made considerably longer. If you use Bellows 2, you will find at once that a great deal of fiddling is necessary to remove the camera body from the bellows assembly; most fingers will not fit into the crevice between body and rear standard, where the unlocking tab is located.

There are two solutions to this inconvenience. The easiest is to rotate the camera half-way between its horizontal and vertical alignments on the bellows, then lock it into place with the thumbscrew. Now the release tab stands out slightly above the flat top of the rear standard and can easily be depressed to unlock the camera-bellows combination. The more elegant, perhaps, is to fashion an extender for the tab and cement it in place. Your own response will depend on how often you expect to make serious use of your bellows.

Microscope Adapter

The Pen SLR system included a microscope adapter, which was usable with all Pen SLRs, not just the Scientific Model, and was made available very early in the Pen development period. If you have one of these accessories and do not want to use it for its intended purpose, it might seem to be a very convenient source for a rear flange with which to adapt lenses from other systems to the Pen SLRs, a process we shall be getting into in a later chapter.

Like the extension tube set, however, the microscope adapter has no lensmount locking assembly. It is thus likely to loosen if you use its rear portion as an intermediate tube on the camera in general photographic situations. Unfortunately, therefore, you will do better to keep it as part of your Pen memorabilia, or else to use it as it was intended if you happen to own or have access to a microscope.

The effective length of the tube is 98mm. Its front portion, with an internal diameter of 26mm, a standard size, is made to fit around the eyepiece of the microscope. It has a screw-controlled inner ring that clamps down hard on the eyepiece, and the front of the adapter rotates freely within its main body so that the camera can be oriented however you want once it has been mounted and locked down. You will, however, have to be careful not to allow the rear bayonet of the adapter to become loose in the camera body bayonet flange.

I can think of no reason why this accessory could not have been made with a mounting lock. It seems a peculiar decision not to have done so; Mr. Maitani must have been asleep when a junior designer ran it by him. And that certainly is too bad!

A Custom-Made Optical Instrument Adapter

Recently a good friend, Bob Martin, unearthed a very interesting variation on the standard microscope adapter. Clearly the one he found was not made by Olympus, and it may well have been used with a telescope or some other optical instrument, not a microscope. Nevertheless, because of its unusual configuration it deserves mention here.

The camera end of this unit has been made from a part very like the rear flange assembly from a Pen SLR lens. But although this part has a lens locking button and its associated hardware, it has no stop-down button nor a slot into which such a button would have been mounted. Apparently, it is a part that was once made, at least in limited quantities, so that special optical equipment could be adapted to the Pen cameras. I know of no other example quite like it.

From the flange assembly a nicely machined brass tube extends forward roughly 64mm. The tube is flared out at the rear in order to mate with the flange piece; at its front it is flared out again very slightly to receive the forward unit, which I shall discuss in a moment. For most of its length, the brass tube is about 34mm in outer diameter.

Embedded in the flared front end of the tube is the forward element of a lens; the rear element is set back about 20mm to 25mm into the tube. Taken together, these two elements form a positive lens of about 45mm focal length, but because of the tube's length they will of course not focus on a subject farther away from the camera body than about 450mm, and since the tube does not extend or retract, the focal point is fixed.

Clearly this assembly is a relay lens, for a third tube forms the front of the assembly, this one black and carrying a "Made in Germany" legend as well as a small pictograph of a dog with a key in its mouth. I seem to recall having seen the latter before, but have not been able to locate a reference in order to refresh my memory. In any event, this front tube is very like a microscope one except that instead of the normal clamping devices it has two spring-loaded ball bearings that were obviously designed to engage in a groove on some eyepiece or other viewing part of a scientific instrument, most likely an astronomical telescope or specialized microscope.

To the Olympus Pen enthusiast, the most interesting thing about this special assembly, perhaps, is the camera flange with lock but without stop-down tab. To the photohistorian, its interest lies also in the fact that someone went to a great deal of trouble to make a very specialized part in order to couple a very non-standard camera to what has to have been a somewhat esoteric scientific instrument. It demonstrates that the Pen SLR family, and its single frame format, were being taken seriously by serious people during their heyday. Some day, perhaps we can discover just who went to the trouble of putting it together, and why he did so.

Copy Stand

With all of the other specialized accessories for exacting reproduction work that had been made available, it is no surprise that Olympus produced a copy stand with accessory lights for their single frame camera system. This is a slightly smaller version of the same sort of unit that has been made over the years by many manufacturers, resembling an enlarger assembly without the enlarger body. The camera rides up and down the vertical rail on an arm that includes adjustments for tilt and extension.

A second copy stand, discussed immediately below, had more general application to the less comprehensive single frame system cameras but was quite usable with the Pen SLRs.

Lensmount Accessories

Eventually, Olympus issued adapters for lenses in at least five standard but non-Olympus lensmounts. Those for Exakta, Universal Thread (Pentax Screw), and Nikon F mounts, all of which allowed use throughout the focusing range to infinity but did not retain any automatic diaphragm stop-down coupling facility, appeared fairly soon after the Pen SLR system was marketed. So did Olympus' Leica thread-mount adapter, which however did not permit use of rigid Leica, Canon, Nikkor, and similar lenses at long subject distances because the flange focal length of the Pen F is two-tenths of a millimeter greater than that of the Leica, even without allowing for the necessary further thickness of the adapter.



A few of the lens converters made for the Pen F system, clockwise from upper left: Olympus P adapter for Universal (Pentax) Thread; Olympus OM to Pen Adapter; Vivitar TA-12 T-Adapter for T-mount lenses; a proprietary Nikon F lens to Pen F adapter.

After they introduced the OM-1, Olympus also made a non-automatic adapter for its lenses, despite the fact the Pen F cameras were by then being phased out of production. A small tab under the front flange of this adapter closes the OM lenses to their working aperture; the only way to view through an OM lens at wide aperture for focusing while it is on the adapter is to open its diaphragm manually with its f-stop control ring.

T-mount adapters for manual T-mount lenses were not issued by Olympus themselves; but many distributors made them available in several configurations, allowing the use of a large number of manual and preset lenses whose qualities range from bad to excellent. These include today's inexpensive long mirror optics, which usually work quite well on the Pen because the sometimes degraded edges of their images are beyond the frame lines of the smaller Pen format.

T-mounts can probably still be found in the stocks of major suppliers; certainly used examples are not hard to locate. Several independent manufacturers also made lensmount adapters for the Pen F; I have seen proprietary non-automatic ones for the Universal Thread, Exakta, and Nikon F lenses, and there may well have been others.

We shall return to the topic of lensmount adapters and adaptations in a later chapter, when we discuss the use of more recent optics on the Pen SLRs.

Other Related Accessories

As a part of their expanded range of equipment, Olympus produced a small four-legged close-up unit, which could be separated into its components for easy carrying. While it could be used successfully with the Pen F camera series, it had first been designed for use with auxiliary close-up lenses on the non-reflex Pen cameras. Its height was adjustable by shortening or extending the four legs, and reproduction tables were provided for its use with those Pens that had optical finders.

They also made a small projector for single-frame slides, with several accessories; this, obviously, worked with images from all members of the Pen camera family as well as those from the multitude of single-frame amateur cameras that were being made by many other manufacturers.

We have now completed our discussion of major elements among the Olympus Pen SLR system itself. Next we shall consider some technicalities relating to the single-frame film format, and then turn to using the system.



Four normal lenses: clockwise from left side, the 38mm f/1.8, 38mm f/3.5 macro, 40mm f/1.4, and 'pancake' 38mm f/2.8.

IV. SOME TECHNICAL CONSIDERATIONS

The Format in Theory

At this point our basic assumptions are shifting a little from those that lay behind the earlier sections of this essay. The information given there is as useful to a collector as it is to a potential user. From here on, however, we will concentrate a little more on the requirements of someone who wants to make at least occasional recreational use of the equipment in his Pen SLR collection. In order to do so, we must begin by examining the advantages and confines imposed by the single-frame film format.

A lot of superfluous garbage has been written about the relationship between single-frame and double-frame focal lengths. There are only two useful ways to look at the situation. The first is by negative size, the second by context analysis. There is not a great deal of difference in the results obtained, but examining it may be instructive.

If you print your negatives full frame, then obviously the area of the single-frame negative is exactly half of a double-frame negative, assuming you use the nominal dimensions of 24x36mm and 18x24mm. In this case, the one that has been traditionally assumed and more or less the one that was accepted by Olympus in calculating the equivalents that used to be listed in their lens charts, the relationship between focal lengths is based simply on area coverage, a ratio of 1.414:1.

Another way to go is to find the difference between the two diagonals. Because of the difference in shape between the overlong double frame format and the relatively stubbier single frame, the ratio of their diagonals is different from that of their areas. The double frame diagonal measures 43.27mm; the single frame's is 30mm. Their ratio is 1.442:1, somewhat greater than the total area ratio of the two formats.

But this is not all. Because the negative formats of single versus double frame are so non-identical, we can go even farther. The ratio between sides of the 24x36 format is 2:3, but the one between sides of the 18x24 format is 3:4. If you are willing to use the full frame of both formats, these differences, too, must be analyzed.

Let's suppose you have a long, but not especially tall, subject: something like a railroad locomotive. The determining factor here is the long dimension of the negative, and to compare double and single frame formats in a case like this you must determine the ratio between their lengths, 36mm and 24mm. It works out to 1.5:1, an easy calculation.

Now suppose we have a subject which is just slightly wider than it is high: something like the front view of a compact car. Here the determining factor is height, or the short dimension of the format. The ratio between 24 and 18 is only 1.333:1, considerably different from the length ratio. This ratio also expresses the difference between formats if you make your prints to a 4x5 or 8x10 format as a matter of either choice or conviction.

To make an 8x10 from the 18x24mm format, you actually use 18x22.5mm of the negative — almost all of it, in other words. It is a nearly ideal format. In the 24x36 format, however, the usable area for an 8x10 print is only 24x30mm; 144 sq. mm. are wasted. This is true because the longer frame dimension of the smaller negative is disproportionally shorter than that of the larger one. In this case the ratio between short sides, already established to be 1.333:1, is a more accurate statement of the difference between formula. This might be called a "context area" ratio.

We need to know these ratios because they are the same as the ratios between those focal lengths that will produce similar results on each of the two formats. The context-based 1.333:1 ratio that I have suggested often seems as a practical matter to be a more realistic statement of the relationship between the two film coverages than is the traditional area-based 1.414:1 ratio — which really depends on an artificially wide-screen attribute of what we now accept as the "normal" 35mm film format — or the even more extreme 1.5:1 ratio based on the long side of the two formats.

As a practical matter, in comparing focal lengths we will probably do well to adopt a nominal 1.4:1 ratio to make calculation simple. This figure is somewhat weighted in favor of the short side comparison. Appendix C gives the actual double-frame equivalents for all Pen F lens focal lengths by all five methods of calculation; it should make any figure filbert's day! Actually, what it really shows is that no matter which method you use to calculate, the equivalencies are pretty close; but in fact this is a worthwhile datum to establish.

In doing so, we have also established that for many practical purposes the single-frame format is more economical of film than is the double-frame one. Very little negative area is wasted when you make a standard-size print. With the double-frame, at least 144 square millimeters of film are wasted every time you produce an 8x10, and you use at most an area of 720 square millimeters. With the single frame, only 36 square millimeters of surface is omitted, and 405 square millimeters are used. For 8x10 purposes, the single-frame negative is therefore 56% the size of the double-frame one; not, as one would first think, simply 50%.

There is, I must concede, one practical Pen SLR format problem that needs to be mentioned. It affects, however, only one area of applied photography. In the past, potential users have been attracted to the system because it seems an easy way to produce filmstrips, which are essentially single-frame positives on film that has been left uncut in order to produce sequential photographs for projection or other viewing. A length of

35mm projection film from a cinematographic feature is identical in format to a length of filmstrip.

But the Pens were not designed for this purpose, and if you try to project a Pen-SLR-produced filmstrip on an automatic filmstrip projector, it will quickly drift out of register. Pen filmstrips work fine on manually operated projectors and viewers, but not on automatic ones. The reason is a slight but crucial difference in the specifications of the Pen film frame and its location relative to the sprocket holes of the film, as opposed to the specifications laid down for standard filmstrip work.

Filmstrip production must have been a possible use that did not occur to Mr. Maitani when he first designed his tiny SLR camera. Had he thought of it, the camera could easily have been designed to conform.

The Format in Use

Now that we have examined the format of the Pen F system, the five camera models that it embraces, its lenses, and the accessories that are available, only two questions remain before we turn to using the system. The first is, do you really want to go the single-frame route?

Clearly this is a subjective problem. There are, however, several objective factors that may help you to decide. First is the size of the equipment. Pen SLR cameras are only a smidgen bigger than a Leica IIIf, and with the tiny 38mm f/2.8 lens they are readily pocketable. Indeed, even with the 38mm f/1.8 or 40mm f/1.4 mounted, a jacket pocket will easily hold the camera ready to go; three additional original Pen lenses will fit just as easily into the pocket on the other side. And ladies' purses might as well have been made just to hold Pen SLR sets.

Now, the question of esthetics. How well do single-frame photographs match the expectations that you bring to your photography? In my case, my esthetic thinking about photography incorporates the idea that grain is an inherent attribute of the medium, and can indeed often be used in order to enhance the medium. Thus I actively enjoy printing a single-frame negative in which the grain is readily apparent. But you may feel differently.

With today's emulsions and developers grain in a single-frame negative can be subdued to a remarkable extent if such is your bent. So far as that goes, all of my early pre-war 35mm photographs from 1938 to 1943, mostly made with Super XX or Agfa Ultraspeed, are a great deal grainier than any that I have ever made with the Pen onto Tri-X film. Here, of course, we are talking of black-and-white work, but in fact the serious color worker can also choose amongst options that will either exaggerate or subdue the effect of grain on his final print.

The real problem, of course, comes when we consider the use of color transparency film: not because the format will not work beautifully, but because almost all laboratories will return your single-frame film uncut and unmounted. Mounts are available for this format from suppliers like Porter's and Spiratone, but you have to do the work yourself. Only the individual photographer can decide whether or not he wants to do so.

So far as questions of sharpness are concerned, the Pen F family of lenses will produce photographs that are essentially equal to those made by most lenses that were available for full-frame cameras of the same vintage. They are one heck of a lot better than the Summars and Sonnars that I used in the late 30s and early 40s. Lots of us still happily use twenty year old lenses, and the careful worker will not be displeased with the results he gets from the original Pen system of optics. Also, of course, it is possible to adapt more recently available optics to the system, a topic we shall be discussing in more detail, and this provides alternatives for improvement that were not available twenty years ago.

The Pen SLR Shutter

Next we should lend a little thought to the topic of shutter speed accuracy. I have had the opportunity to test shutters on nineteen cameras: three original Pen Fs, nine FTs, four FVs, two Pen F Scientific Models, and one FT Scientific Model. They varied from essentially like new condition, through ones with average apparent wear, to ones with various operational defects that looked as if they had been well and truly used up. Here are some generalized observations of my results, a few of which were confirmed by independently conducted speed tests at Photography on Bald Mountain.

Two matters of shutter accuracy are of primary importance in selecting a camera for use. The first is the accuracy of the marked speeds; second is their repeatability. The user can make adjustments in the first instance: if his camera's speeds are not as marked, he can determine what they really are by measurement or by trial and error and use these substitute speeds as his norms. But if his shutter does not reproduce its measured speeds accurately from exposure to exposure, he will have problems that are not so easily solved.

My tests suggest that the Pen SLR shutters were never capable of producing a measured speed of 1/500, their nominal top. The original Pen F models tested showed an average fastest speed of roughly 1/300; the later cameras averaged a little below 1/350. On the average for all types, however, the next slowest range between 1/60 and 1/250 was the most accurate. We have seen that in the Pen SLR design all speeds slower than the fastest are produced by two delaying trains in the timing mechanism; the fact that on almost all examples, worn as well as apparently almost unused, the 1/60 to 1/250 range still seems to be accurate supports the theory that the 1/500 speed never was.

Among the cameras I tested, the range of 1/15 and 1/30 tended to be somewhat less exactly spaced than the one next higher. The slowest speeds, from a second through 1/8, are even less predictable. In general, all the speeds below 1/60 are likely to come in faster than marked, some by as much as 50%, or 1/2 of a stop of exposure. Oddly, however, the one second speed, though often fast, was not as far out of adjustment as some of the intermediate ones on the cameras I tested.

Repeatability is not superb; the best speeds in this respect are the ones marked from 1/60 to 1/500, which showed much less variation from exposure to exposure than the ones governed by the second delaying train. The usual variation in high speeds during consecutive exposures held within 10%; slow speeds could vary by as much as 25% or more. Thus the Pen SLR shutters are not really consistent enough to use for delicate work with color transparency film. Few of us, however, would plan to use them thus, since the format itself, as we have noted, obviates against gaining any practical advantage from this application.

For kicks, I made a comparison by testing the shutters of three Leicaflexes, one early model and two SLs, which were contemporaries of the Pen SLR series and are widely regarded as exemplars of well-built mechanically controlled shutters. Leaving apart the question of the 1/1000 and 1/2000 speeds on the Leicaflexes, within the range covered by both makers they tended to show a slightly better accuracy of matching the timed speeds to the marked ones than did the Pens, just as one might expect. They also demonstrated a tighter range of variation, five to ten percent between adjacent consecutive exposures for the most part. Like those of the Pens, the Leicaflex slow speeds seem to run fast.

Considering the room available for the shutter mechanisms and the general quality of workmanship as based on the cost of production, my feeling is that the Pen series compares pretty well with the best available at the time they were made. I do recommend, however, that my findings about shutter timing strongly suggest that if you decide to work with a Pen SLR, you should make an effort to determine the characteristics of your own Pen's shutter before using it to attempt any otherwise irreplaceable photos.

V. CHOOSING THE BEST MODEL FOR YOU

First Thoughts

By now we have discussed just about everything you need to know in order to decide whether or not to become involved in the Pen F system. But we have not yet answered one important question: is investing in and using a Pen SLR camera system a worthwhile financial proposition? If you are primarily a collector, then your own interests will determine your response, but if you intend to be a user some other considerations must be faced.

The first is: which camera should I start with?

I think the careful reader will be able to guess my own response: the Olympus Pen FV is the best of the five alternatives for the present-day user, unless you plan to make some modifications to another model. We shall soon go into the latter topic at some length. But the FV has the improved winding mechanism that the original Pen F lacks, and it does not have the brightness-robbing semi-silvered mirror of the exposure-metered Pen FT. The only other FT feature that it lacks is the flash synchronizing switch that allows use of M-type bulbs to 1/500, but you are probably going to use electronic flash anyway and will not need the bulb capability.

The only problem with all this is that the FV is very hard to find. As we saw earlier, it was apparently produced in the fewest numbers. If you do find one, it is likely to have been well used, because the odds are that it was originally bought by a thoughtful enthusiast, not a fancier of the latest thing on the scene.

Because the FV is hard to find, it tends to be expensive. An FT or F will be cheaper. Pen F Scientific Model prices that I have seen recently have run the gamut from inexpensive to quite pricy, and the camera will require modification before it can be used for general purposes. The FT Scientific Model should probably, in fact, be considered strictly a collector's item.

I suggest that you read the rest of this essay, especially Chapter VII, before you finally make up your mind about which model you want to begin with. A Pen SLR these days, while not as expensive as the latest whiz-bang AEAFSLR, is still by the time you add in a few accessories a very respectable investment, and deserves to be well thought out. But if you are determined, you will eventually decide which model to choose for yourself, and then you will need to know how to go about selecting an example that will do what you want it to do. Again, you may have doubts as you inspect what may well become your very own first Pen SLR.

Making the Investment

The first doubt that arises is one of condition: what shape will one of these cameras be in twenty years after it was first sold, and how expensive is it to maintain and repair? In 1980, the last time until recently that I needed to know, parts were still available and Olympus USA still undertook to service the cameras; but when I called them recently, I learned they no longer do so. If satisfaction requires that you have factory service, then you might as well pass on the Pen F system.

Next I got in touch with Ken Ruth and Terry Terhaar, of Photography on Bald Mountain. Over the years, Ken has worked on many Pen SLR cameras and lenses, including the task of recementing lens elements which have come awry, and he knows this camera family well. Photography on Bald Mountain will service and repair all of these models and lenses, but Ken and Terry warn me that doing special work on them can become quite expensive, especially if parts must be fabricated. Cleaning, lubricating, and adjusting, on the other hand, are expenses that are not likely to run any higher than similar work on other 35mm SLR cameras. They may even be less.

I asked Ken what a prospective buyer should look out for when considering purchase of a Pen SLR system. His response echoed my own experience, and I want to thank him for his helpful suggestions and the information he gave me. If your enthusiasm eventually results in the need to have Pen maintenance, modifications, or repair work done, I suggest that you too may want to get in touch with him or with Terry. Since Olympus repair service is not available, you will have to find someone else who enjoys working on the Pens anyway, and their's is one such organization. Meanwhile, here is a distillation of our joint advice about buying a Pen SLR.

First of all, look out for cameras that have been butchered by people whose curiosity exceeds their skill. Giveaways are mashed or broken screw heads, improperly mated parts, and dents that bulge out instead of in. The only exception to the latter caveat is a frequently encountered outward-facing lump just beyond the Pen's film counter window: this is produced by the screw on top of the camera's winding shaft, which lies

just below the top cover plate. Sometimes if the cover plate is pressed a smidgen too firmly during use, it is slightly dented outward by contact against that screw, but the results are not in any way damaging except to the camera's appearance.

Second, if you plan to use the camera at speeds slower than 1/60, check its slow speed train carefully. As we have seen, there are two delaying gear trains in the Pen F shutter mechanism. The one for the slowest speeds tends to give out first, and it is very likely — if we accept the results of my series of tests — that these speeds were never governed with high precision anyway.

On the example whose purchase you are considering, are the speeds in its slower range consistent? Or is there one speed that is noticeably out of line with the rest? If so, you will need repairs in order to get the camera into first-class shape. They can be made, but at a price. Given the choice, buy a camera all of whose speeds work together consistently, even if somewhat inaccurately, because personal recalibration by trial and error, or even a professional cleaning and lubrication, are much cheaper than a repair.

Look through the finder and see that the lenses in question focus properly at infinity. If someone has mis-shimmed something, you may have troubles. The focusing ring of each lens should move freely unless you are willing to have the assemblies relubricated. Remove the lens from the body by depressing its left-hand “ear” and turning clockwise as seen from in front; unless it is one of the super-rare ones, reject it if it has cleaning scratches, if the view through it is hazy, or if the cells are loose.

Next, make sure that the intermediate stops are properly selected by the F-stop setting ring and that their apertures are in good relationship to each other. Remember too that the largest and smallest openings may have become jammed or gummed up by dirt, dust, or moisture, and cannot be selected at all. Often a simple cleaning and lubrication will get things back into working order, but not always; again, given the choice, acquire the lens that is already working best.

Now, remount the lens to the body by matching the red dot behind the lens' central focusing index against the red dot on the camera flange and rotating counter-clockwise until it locks home. Make sure that the lens mechanism has not over the years gotten too lazy to close the lens to the proper aperture during exposure: open the back of the camera, select the smallest stop on the setting ring, put the shutter dial on Bulb, and hold the shutter open while you examine the circle formed by the diaphragm leaves. Then set the shutter to 1/500, fire it against a bright light, and see if the opening matches the one you saw earlier.

Naturally, if you are testing an FT whose meter you want to use, you should check its meter's results against a known standard. If you really want to use that meter, find a camera on which it works, because a bad one is probably gone for good. I suggest, however, that the sanest course is to treat the FT as if it had no internal meter at all.

Open the backdoor and inspect to see that the shutter has not suffered damage from someone's fingers. If there is something wrong with the titanium shutter disc, which is thinner and more fragile than it looks, reject the camera immediately. The only way to fix it will be to cannibalize another camera, and this will clearly be costly!

Check the winding mechanism. If the lever has to be forced before the shutter can be made to fire, you will need a readjustment. Fortunately, this is usually a minor job, but a nuisance nevertheless. The original Pen F model seems to me to be the worst offender in this respect, and as I suggested earlier either an FT or an FV is likely to be a better choice as a user camera than is a Pen F, anyway.

Sometimes faulty lubrication will have smeared the focusing screen. Also, the sponge “rubber” than used by Olympus for sealing and shock absorbing has had a tendency to deteriorate over the years, and it may have dirtied or speckled the screen on either or both sides. We will return briefly to the topic of focusing screen work later on, but because getting at the screen requires major disassembly, any screen fix is likely to cost you a good deal.

The screens are two-part affairs: the screen itself, backed by a condenser glass and prism. Any oil, grease, dirt, or even plain dust between them is a real problem. While you inspect the screen, also look and see if the moving mirror has been damaged or dulled by fingerprints or oxidation. If so, reject the camera. Its mirror, too, is an uneconomical repair.

Fortunately, you can generally tell from the appearance of a Pen SLR body whether it has been used or abused. Most good-looking cameras still work, or at least have a good potential to do so with only minor attention. Original owners tended to fall into two groups: those who used their cameras hard, and those who admired them from time to time but rarely exercised them. It's just like Leicas and their owners. The odds are that a beautiful-looking Pen F camera will need little more than a clean-lube-adjust to make it function almost like new.

VI. USING YOUR PEN SLR CAMERA

The Cameras Themselves

Okay: you've decided to buy and use it. How does it operate? In fact, the earlier section wherein we discussed the layout of the five models pretty much answers this question, because there are few controls on any of them. But let's take the basics step by step one more time. Then go back and reread the appropriate parts of the earlier discussions.

You load all the Pen SLRs by pulling up against spring pressure on the rewind knob until the back opens. Don't use the crank arm for this extra leverage, because you will certainly weaken the pin that holds it to the knob, and may well eventually bend the shaft; also the tip of the crank suffers from an annoying tendency to pull loose. On most Pens it is held only by peening the lower end of the little central shank around which it revolves.

Film goes into the well at the left, and its end attaches to the slot (in the model F) or one of the slots (in the others) in the takeup spool. On the Pen F the film winds inside out onto the take-up spool, with its emulsion side out; but on the later cameras this is reversed and it winds across the spool with its emulsion side facing in. Make sure the film is taut and the sprockets are engaged in the film-edge serrations, then close the back and lock it against its internal spring pressure. Three blank frames are more than enough to lose the light-struck end of the film; if you work carefully and use only two, you can cram as many as 77 or even 78 frames on a 36-exposure load, should economy be your goal. But of course, if you bought into the system at recent prices, it is not.

There are two flat pushbuttons, like ears, on either side of the top rear of each Pen lens as it is mounted on the camera, in the style later made more familiar by the Olympus OM camera system, for which it was somewhat modified. When it is depressed, the button the left as you face the front of the assembly, marked with a red "L", frees the lens for removal. As with the Nikon SLR system, lenses are removed by rotating them through a clockwise arc as seen from the front. The unmarked right button, when depressed, closes the lens to its user-set aperture for depth of field preview or, should you choose that mode, for stopped-down exposure metering.

Shutter speeds are set on the front dial; if you are using the meter in an FT, a procedure that will be investigated in more detail in the next section, you also can set the film speed in the window on the same dial, unless it falls beyond the ASA 25-400 range. If this is the case, set half the proper film speed value and close your lens down one digit beyond the scale number that the meter reads out. Since the FT meter has no "On-Off" switch, its battery can be exhausted more quickly than you might expect. The only way to conserve battery power is by capping the lens tightly except during your actual picture-making session. Be sure the meter is reading accurately before each day's outing. Better yet, as you have already heard me say, forget the meter entirely and use a good hand-held one.

Set the appropriate F-stop for your shutter speed on the front ring of the lens, using the F-stop scale unless you are combining an FT lens with the meter readout from an FT camera and working with the equivalent readout numbers rotated to the top of your lens.

Focus your subject on the groundglass, or with the help of the microprism in the FT or FV, just as you normally do. The screen image is about 85 percent of lifesize, plenty big enough for most work. Make the photograph by applying gentle pressure on the serrated rectangular release button at the front edge of the top plate. With such a small negative, you want to avoid camera shake as fully as possible by applying a slow, steady release motion whenever possible; choosing a shutter speed a stop or more faster than the one that you might have picked for a double-frame camera also helps.

If you need the delayed action of the FT or FV, rotate the front-mounted lever 90 degrees upward until it stops, then start the delayed action by depressing the small button at the lever's hub. You can in effect cancel the action while it is going on by using the normal shutter tab release to make an exposure, or if you change your mind before tripping the delayed action button you can use the shutter release tab as you would normally and then allow the delayed action to run down by pressing its button before winding the camera.

The frame counter has numbers for every four frames up to 72. There are intermediate dots for every second frame. If you are cautious, you can stop after frame 72; if penurious, carry on carefully, until the camera refuses to wind any farther, and thereby squeeze out a few more frames. You will pay for this miserliness when you try to file the little end of negative film with those extra three or four frames on it.

When rewind time does arrive, depress the button set into the camera's baseplate; it will stay down. Then unfold the rewind arm from the knob assembly and rewind as you always have done until resistance disappears. Open the back, remove and develop your film, and enjoy the results!

Metering With the Pen FT and FT Lenses

As has been seen, there is no provision for the lens to tell the camera what either its maximum or its effective aperture settings are; nevertheless, exposure metering on the Pen FT can be done in a full-aperture as well as a stopped-down mode because of the odd and awkward scalar number readout system adopted by Olympus.

Lenses made subsequent to introduction of the Pen FT in 1967 are often called "FT lenses" in order to distinguish them from earlier versions of the same units. There are no optical differences between the equivalent early and FT lenses; the only difference is that the F-stop setting rings on the FT lenses have a double set of scales: one reads in actual stops, and another reads in a scale of numbers between 0 and 7, although usually not all eight numbers will be found on any one lens.

The scalar numbers correspond to the numbers in the FT's meter readout window, found just outside the framed view in its finder. The readout numbers are entirely artificial; this is a system that was adopted in order to avoid having to design a new and much more intricate lensmount that would have been capable of signaling maximum aperture from lens to camera body. Doing so would have required enlarging the camera bodies and lenses, and would also have obsoleted all the earlier lenses after only three years of availability.

On FT lenses, either the F-stop or the scale value numbers can be positioned on top when the lens is in use. To change from one scale to another, simply pull the aperture setting ring forward (some do not require this action) and rotate it 180 degrees, then let it lock into place. The ring is click-stopped in either orientation. If you do not use the meter in your FT, it is best to have the F-stop scale on top, and of course the same is true if you use an FT lens on one of the other Pen F models.

Each FT lens type has a different numerical equivalency between its scale numbers and its actual F-stops, depending on its maximum aperture and its focal length. Earlier lenses can be used on the FT; because they do not have the FT scales engraved on them, however, you will need to resort to a certain amount of trial and error in order to find the necessary equivalent scalar numbers unless you have somehow found a set of the appropriate little gummed stickers that Olympus once supplied for updating early Pen F lenses. Try some bracketing, using 0, 0.5, and 1.0 for your wide-open equivalents.

In general, the smaller the stop on each lens's setting ring, the higher is the scale number between the minimum figure and 7. But please note that the differences between the first, second, and even the third marked F-apertures are not always accompanied by full-number scalar steps. Nor do the scalar numbers necessarily coincide exactly with a marked F-stop.

We have seen that the speed value of your film must be entered into the small window in the FT's shutter dial. You can refer back to the previous section to review how this works, but it is in fact very straightforward. Metering, however, cannot be correct unless this step is carried out.

Since the FT meter, which covers the entire frame area with little or no center weighting, was not particularly accurate to start with and on most cameras has probably become even less so over the years, my repeated advice has been to forget it except in the direst emergency. Treat your FT as you would the Pen F or Pen FV: use a good hand-held meter to determine your exposure, and ignore those scalar numbers between 0 and 7 entirely.

Using the Pen's Accessory Exposure Meter

Some of you may want to try out the accessory clip-on meter with your camera. It fits all models except the FT. This is a CdS unit whose battery is loaded into a well under the serrated cover at its top rear. It has quite a wide angle of acceptance, and is best used either close to your main subject or reading from a substitute surface at close range. Used thus, it was originally quite accurate, and may still be if you bought it on one of your lucky days. All shutter speeds except Bulb may be chosen with the meter in place.

The indexed ASA range of this meter extends from a low value of 6 to a high of 800, considerably broader than that of the internal FT meter. ASA values are set in a window directly above the "ASA" legend. This is best done before the meter is mounted to the camera.

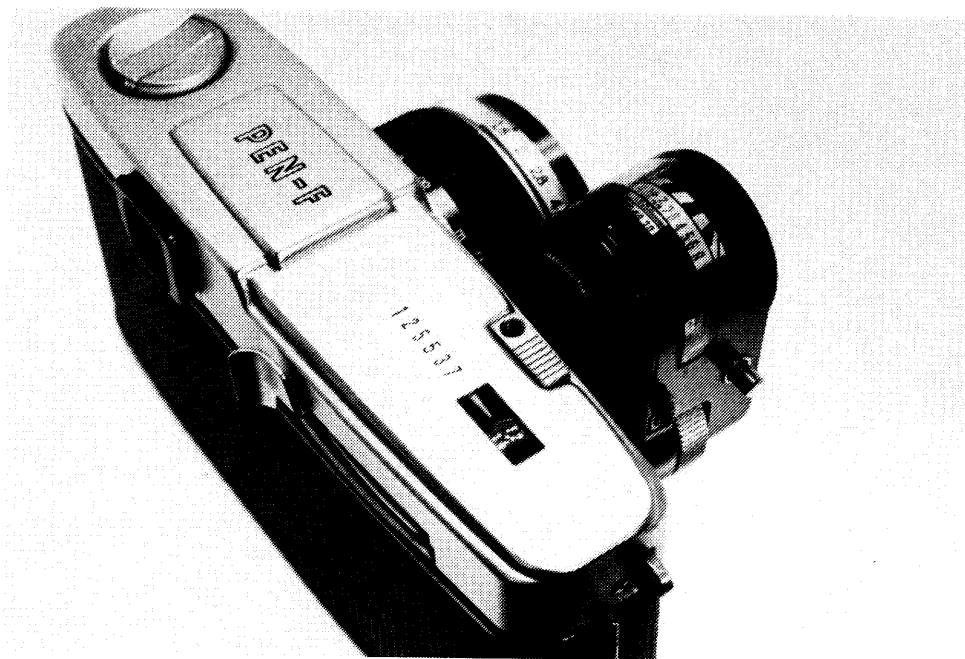
First, rotate the large embedded serrated chrome speed setting ring until you can see the red indexing dot on the narrower of the two rings behind the window. Then depress the short chrome button on the other side, marked "ASA SET", hold it down, and rotate the speed setting ring again in order to move the ASA value scale on the broader internal ring past the indexing dot.

What might seem to be additional ASA values of 1, 2, and 4 are actually the three slowest shutter speeds, which appear in the ASA window when film speed values beyond 800 are attempted. By careful interpolation beyond the 800 setting, however, you can extend the range of the meter upward by a value of about two F-stops. The low value of 6 is final. When your correct speed is properly indexed, release the chrome button, and your chosen value will lock tight. The meter is now ready to be mounted, unless you want to use it hand-held.

It fits over the shutter speed dial. Place the well below the battery cover over the camera's shutter dial, with the top of the meter (the end with the readout window) facing directly outward, toward the camera's right-hand end; then rotate it up until it locks into place. Turn the speed setting ring back and forth again until the speed dial of the meter locks onto the speed dial of the camera. To remove the accessory, depress the flat milled tab behind the "ASA" legend and turn the meter 90 degrees away from the lens; then lift it forward off of the speed dial.



Accessory exposure meter mounted on the shutter dial of a Pen F. The "ASA Set" button is directly above the meter's embedded main setting wheel.



Another view of the mounted exposure meter. F-stop and shutter speed dials are under the top window; the window lower on the right side is the ASA set readout. The button below and in front of this window selects the meter's more sensitive range; the flat tab in back, above and rearward from the main setting wheel, unlocks the meter for removal from the camera.

When the meter is mounted to the camera, the readout in the small inset part at the rear of the scale window will indicate the shutter speed that you have set; if you have chosen to hand-hold this accessory, set the proper matching shutter speed opposite the meter window's read triangular index. The Pen F meter has two ranges: normal (bright-light) F-stops are engraved in black, and low-light ones in red. To use the more sensitive red range, depress and hold in the push-button that extends away from the lens side of the meter, below and forward of the little window marked "ASA". In whichever range you use, the proper F-stop will be indicated by the needle at the front of the readout window: it sweeps across a black-and-chrome field whose divisions lead directly to the applicable F-stop range behind them. Set the F-stop indicated by the meter onto your lens, and blaze away. This meter does not use the FT scale numbers, thank goodness.

A Quick Summary, and a Foretaste

You now should have all the information that you need in order to identify the Pen SLR models, lenses, and accessories; to choose which among them is likely to please you best; and to use it without too much agony. This is, I suppose, about as far as most users will want to go.

The part of this book that remains is dedicated to the occasionally-met user who wants to get even more from his Pen SLR system. Some of the ideas that it contains, though, are generally useful. And some of the lens adaptations that it suggests are easy to make for yourself; they may help you to expand your single-frame outlook on your surroundings.

I suggest that you at least browse through the sections still to come. You may be pleasantly surprised — perhaps, even inspired!

VII. MODIFYING AND ADAPTING FOR EFFICIENCY

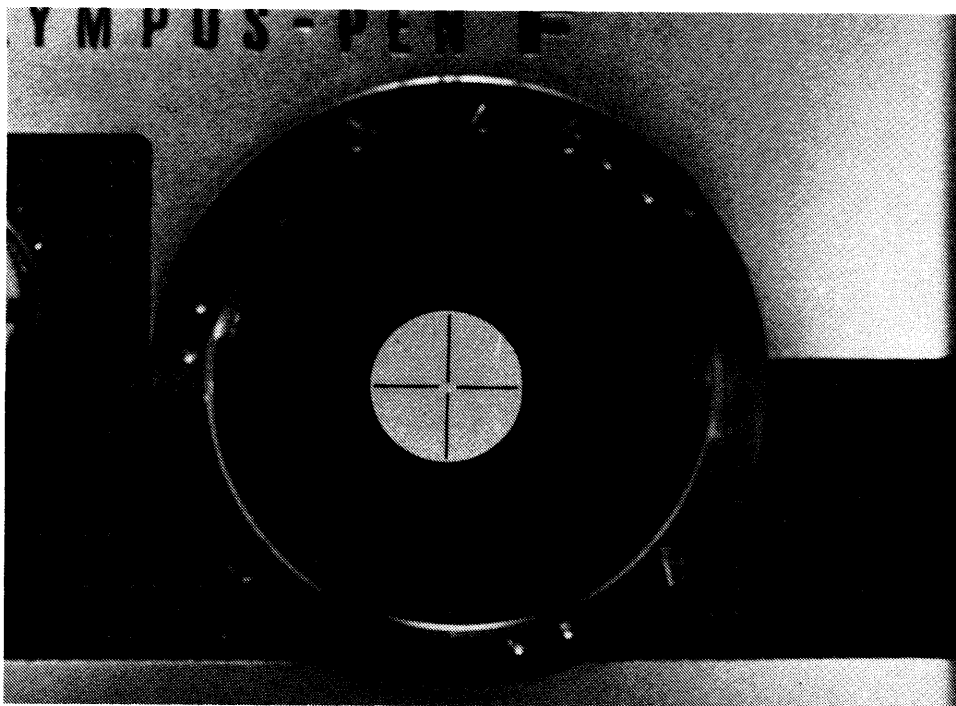
Some Further Thoughts About Choice Working with Your Repairman

Earlier on, I suggested that the best of the Pen SLR models for current use in the Pen FV, because it has the brightest finder image as well as the somewhat improved internal mechanisms. This is all true. But the FVs are hard to find, and likely to be costly when you do find them. What, then, are the alternatives that may prove to be just as good?

My own first idea was to replace the focusing screen in a Pen F Scientific Model with the standard screen from an FT, and in fact I had this done by Olympus on one camera some time ago, when they still had the parts on hand. Having got rid of the circular aerial image found as standard in the Scientific Model, I discovered that the reworked camera operates like a charm.

It has other advantages, too. It retains the synch switch that is found on the FT, so that the M-bulb alternative is available if wanted. AG-1 bulbs and flash units are (or used to be; I have not tried to find any recently) a good size for the diminutive Pen F camera series if you only need to make a few shots. And the Scientific Model lacks the delayed action feature, meaning that it has no little lever on its front face to get in your way.

Pen F Scientific Models are no easier to find than is a good FV, but many that do come into the market are in better condition than most FVs. The well-used Scientific Models have mostly been fully depreciated, used up, and scrapped. But the problem with this solution is the cost of replacing the screen. When I had the job done, Olympus still had the parts and the repair facility; the job cost me only about \$50, including a clean-lube-adjust session in the bargain. Nowadays, with the necessity to find a repairman who is willing to make a special screen by cutting down someone else's example, it would surely cost well over twice as much.



The view through a Scientific Model Pen: why you don't want to use an unmodified one!

Then, not long ago, I had an inspiration. The possible best of all possible answers, I suddenly thought, might be to buy a Pen FT with the determination that even if its exposure meter does still work no one is really going to use it for determining exposures. Then, either immediately or when you decide to have it cleaned out and lubricated, get your repairman to remove the old semi-silvered mirror and replace it with a new full-silvered one. First surface mirror stock is readily available.

Within an hour I was on the phone to check out this idea with Ken Ruth, whom you have already met. He thought that the switch could be done quite readily, since the mirror thickness as installed in the camera body

is not critical. Any good first-surface mirror stock of roughly equivalent depth can be cut to size and installed from the top of the camera once the cover plate and part of the metering mechanisms have been removed; the disassembly required is comparatively minor, and the job will likely run to only about half the cost of replacing the focusing screen in a Pen F Scientific Model.

True, Ken had never done this particular task at the time that I spoke with him, but he agreed to try it. With me, he thought that it would be more than just worthwhile. The ageing finder mirrors in the Pen F and FV almost always show signs of oxidation or tarnishing anyway after all these years, so if the mirror switch were to be executed it should have produced a Pen FT whose finder would probably be brighter than that of any current FV.

We were right. It works like a charm. If you are prepared to do without the FT meter, or more likely yet if you have a FT whose meter is not all that it may once have been, you can have the camera transformed into a better than new FV clone for a comparatively small cost.

Once you have had the transformation made, use heavy electrical tape to cover the FT's readout illumination window. Better yet, ask your repairman to do so from inside while he is making the switch. The metering plate must be reused to hold the new mirror in place, so that its little cut-out will still be there; and the meter readout scale will be distracting to you if you don't block it off, particularly so since now its scale will mean nothing at all.

If you are worried about reducing the collectible value of your FT, you can always have the original mirror and meter coupling parts returned to you. When the time comes to sell, if ever it should, you can have them reinstalled. But if you follow many of the tips that fill the rest of this article, you will have further destroyed that collectible value anyway. You will also, however, have helped to create a much more usable camera.

In fact, since the Pen FT is far and away the most common of the four models, it is highly unlikely to have a premium collector's value at all. This is especially true if it has any minor cosmetic flaws, even if its works are in superb condition.

To sum it up, then, if you are willing spend a little more money in order to make a doubtful collector's item into a user's gem, my most current advice to you is to buy the Pen FT, which should cost noticeably less than the FV anyway because it is not nearly so rare, and invest your saving plus a modest additional increment into a clean-lube-adjust job and a new mirror in the finder system, between the two prisms. Any experienced repair shop can probably handle the job, and you'll have a refurbished camera, one all ready to go.

Modifying for Efficiency: Further Work with Your Repairman

While you are having the new mirror installed, I suggest that you also ask your repairman to mount an accessory shoe on the top of the camera body, more or less in the center of the slightly raised area. You can epoxy a shoe on for yourself, but if the job is done with two or three short bolts you will not have to worry so much about the possibility of losing your flash unit with the accessory shoe attached to it instead of to the camera body when you jolt your camera on the job. I have made this modification to many of my Pens, because in many circumstances using an additional bracket to hold a flash or auxiliary finder seems to me to negate the whole concept of handy compactness that led to the Pen F cameras in the first place. Why Mr. Maitani did not incorporate a shoe in the original design has always been a mystery to me.

For somewhat more money, the repairman could probably install a hot shoe, and if you plan to use your flash a great deal this might be worth the added expense. I do not use flash except when I have to do so, and thus have not gone this particular route, but there is no reason why it cannot be done if you want. My own answer has been to install when I need it, between flash and camera, one of those readily available hot shoe adapters with a cord that runs between the camera's PC outlet and a hot button in the middle of the adapter's accessory shoe. This also raises the flash a little, which is sometimes beneficial, though also unbalancing.

While we are discussing the nicely useful things your repairman can do, I have one more suggestion. If we are talking about an FV or FT, consider having him remove the entire delayed action assembly, or at least its external arm and trip button. As I suggested earlier, I personally find the little activating arm to be a nuisance; it sometimes gets in the way of my fingers when I am using the camera, and it is also easy to snag on one's clothing or whatever since it sticks out toward the end of the body, forming an attractively engaging slot.

We have already seen that the Pen F shutter and mirror mechanisms are closely linked and marvelously compact; fortunately, the delayed action module is located directly behind the activating arm in the top of the rewind end of the body, entirely distinct from the main works, and serves only to activate the shutter release linkage by moving a long lever that extends across the face of the top prism to the main mechanism end of the camera.

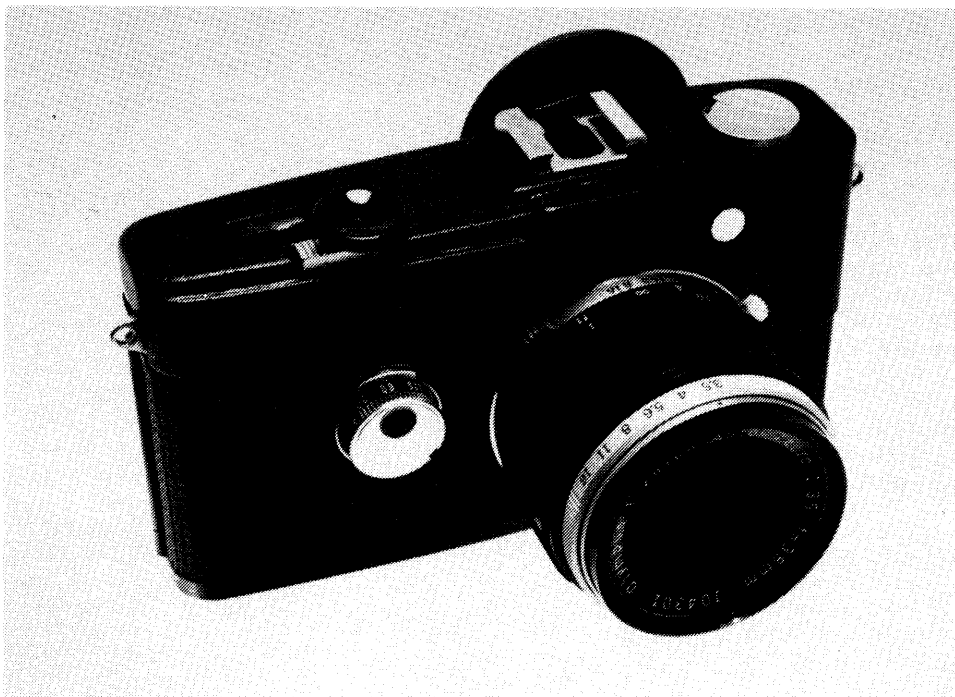
In order to take off the top cover plate to make your other modifications, the repairman will have had to remove the arm and activating button anyway. At the least, then, you should ask him about leaving them both off. The resulting hole can be masked on the inside by a piece of tape; a strip of Dymo tape or even a stationer's coding dot can be used to dress it up on the outside.

Removing the entire modular delayed action unit from the body requires temporary removal of the lens flange as well as undoing a few additional screws, and thus may not be worth the extra cost. It will, however, make the camera a little lighter while also lessening the odds that something may come loose inside later on. I have several delayed action units in little plastic bags right now, waiting just in case I find a need to reinstall them. So far, I have not.

Modifying for Efficiency on Your Own

The following ideas are not difficult to carry out by yourself if you are reasonably handy with the necessary tools. If you fear that you lack the necessary skills, one of your friends may very well have them and be willing to help you out. Before you begin your work on your own, however, please absorb Appendix D. It may save you a lot of trouble, and even some heartache.

1. An Eyepiece Correction Lens and Eyecup Adaptation



A Pen FV that has been painted black and had an accessory shoe added. Lens is the 38mm macro.

Many of us have abnormal eyesight. Olympus used to supply an eyepiece correction adapter eyecup and lenses for the Pen SLR series, but I dare any of you to find the adapter, much less the exactly proper correction lens for your own eye, in this day and age. I own one of each, but the lens I have is designed for someone who is even more myopic than I am farsighted. For those of us with these problems, I have another answer, which requires only a minor modification.

The backdoor of the Pen SLR cameras barely clears the eyepiece frame. Putting an adapter on the frame leads to trouble, because the adapter has to be removable in order to open the camera back. If it is removable, the odds are that sooner or later it will fall off when it brushes against something; and then it is very likely gone forever. Clearly, the adapter has to be attached to the backdoor rather than to the eyepiece frame.

Once you have reached this conclusion, everything falls into place quickly and easily. Take a small piece of approximately 1/8 inch thick do-it-yourself aluminum stock and cut it about 1 1/4 inches square. Then measure the size of the Pen F eyepiece, and on one edge of the square cut an indentation about 3/4 inch deep that will just fit around the bottom and both sides of the eyepiece modling. You now have a U-shaped piece of stock. Drill two small holes in the bottom part of the U, then smooth all the edges and corners with a file and sandpaper.

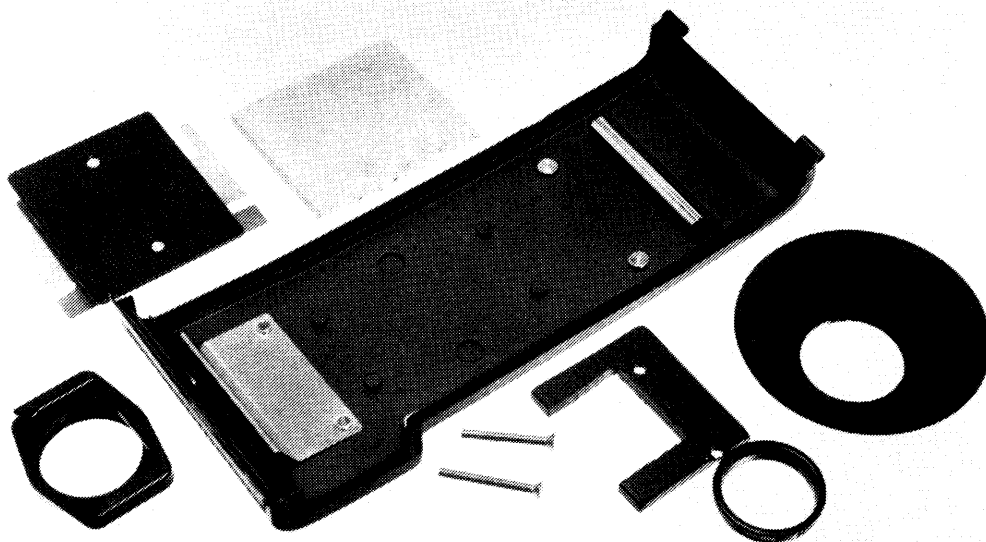
Open the camera's backdoor and remove the pressure plate. It has a single flat metal spring whose four slots fit under four lugs on the backdoor. Ease them apart gently, without unnecessarily bending the spring. One slot goes in vertically as an anchor; release it last. Be extremely careful not to crease the spring.

Close the backdoor again and position the U-shaped block so that it just fits around the camera's eyepiece frame. Against the backdoor, mark the positions of the two holes that you drilled in the adapter. Put the adapter aside, then reopen the backdoor.

To stand less chance of doing violent damage to the camera's works, you may want to remove the backdoor entirely before you do the drilling that comes next. But do not do so until after you have firmly established the hole locations, as just described. Appendix D has a section that will tell you how to remove the backdoor.

Whether or not you have removed it, the next step is carefully to drill two holes in your backdoor at the marked spots, sizing the new holes slightly smaller than the diameter of the bolts that you will use to assemble

the unit: I suggest the smallish 2-56 size, which can often be found at a Radio Shack store. Tap the proper threads into these undersized backdoor holes, and enlarge and bevel the ones in the adapter plate as much as is needed in order to fit the slotted ends of your bolts.



Eyecup adaptation parts spread around the Pen FT backdoor. Clockwise, from left end: Nikon FE Eyecup Adapter for EM, etc.; pressure plate, removed from backdoor; blank aluminum sstock piece ready to be shaped; Nikon FE eyecup; Nikon FE correction lens just below the shaped and painted bracket, which was cut from a piece of stock similar to the one above the backdoor; two 2-56 bolts, which must be considerably shortened before assembly unless you want to risk butchering your camera's shutter.



Eyecup bracket attached to backdoor, with the correction lens and eyecup ready to be affixed.

Now bolt the adapter plate to the backdoor, first cutting off the bolts so that they are only slightly longer than is necessary to anchor the adapter plate. You don't want to poke a hole through your Pen's titanium shutter! Lay the backdoor in place on the camera body; you will find that you need to shim the plate's lower inside edge slightly in order to compensate for thickness of the bevel that outlines the top of the backdoor. Insert enough shimming so that the plate is parallel to the camera eyepiece when the bolts are tightened. Mark the top ends of your bracket at a point just a hair above the top of the eyepiece frame. Then remove the bolts and file them to a final length that will not extend beyond the inner surface of the backdoor.

While the bracket is off the backdoor, cut its top ends at the points you marked, smooth them, and if you want it to look particularly nice paint your bracket black; then fasten everything together again and make sure that nothing interferes with anything else. If it does, fix it and refasten. If you have removed the backdoor, it now goes on again in the same way that it came off.

You now have a U-shaped bracket permanently installed on the backdoor, with the inner edges of the U snugly fitted around the lower three outside edges of the eyepiece frame, and its top just level with the frame's top. Once everything is to your liking, reattach the camera's pressure plate to the backdoor by hooking the slots in its spring under the four legs where they belong.

At this point you can epoxy almost any available eyepiece correction fitting to the bracket. My more elegant solution, if you have the patience, is to attach a removable correction lens. This takes care of future eyesight changes. Acquire a Nikon eyepiece converter, the sort that allows use of FE, FM, and FA correction lenses on the EM, 2020, and similar cameras: it is a small piece of black plastic, threaded to accept those circular lenses.

Using a file, knife, or Dremel tool, cut away the slotted side pieces of the Nikon eyepiece converter, leaving the top overhanging in place so that it will blank out the gap in your adapter above the camera's eyepiece, the top opening of the U. Fit this modified converter to your U-shaped bracket, make any adjustments that may be needed to be sure that its circular opening will center on the camera's eyepiece, and cement it into place.

Now you can install any one of the readily available Nikon FE/FM/FA eyepiece correction lenses on your Pen SLR simply by screwing them onto the adapter. You can also use the very comfortable special Nikon eyecup for the same cameras, and you will find that the support given by the eyecup against your brow makes holding the camera steady a great deal easier when you are photographing at its slower shutter speeds. This attribute alone makes the modification worthwhile, even if you have no need to correct your eyesight. If you do not need the correction lens, use the standard FE/FM/FA eyepiece ring to retain the eyecup. All these parts are regularly listed catalog items and can be ordered through any Nikon dealer; most have them in stock.



Finished eyecup adaptation on a modified Pen F Scientific Model, with soft shutter release in place and accessory shoe installed.

This modification also tends to diminish the collectible value of the camera, true; but you have already done that by installing the new mirror and the accessory shoe. Do you want to use your Pen FT, or just to admire it? In fact, the only permanent marks you have made are the two holes in the backdoor, and if you ever decide to remove the eyecup bracket they can be hidden very effectively with two dabs of plastic rubber.

2. Shutter Release Efficiency

Are there other things you can do to help make the camera easier to use? You bet! For example, we all can sometimes have a problem with the flush-mounted Pen SLR shutter release button — try it sometime when you're wearing gloves — and you may find that you prefer to use one of those dished "soft release" accessories screwed into its cable release socket.

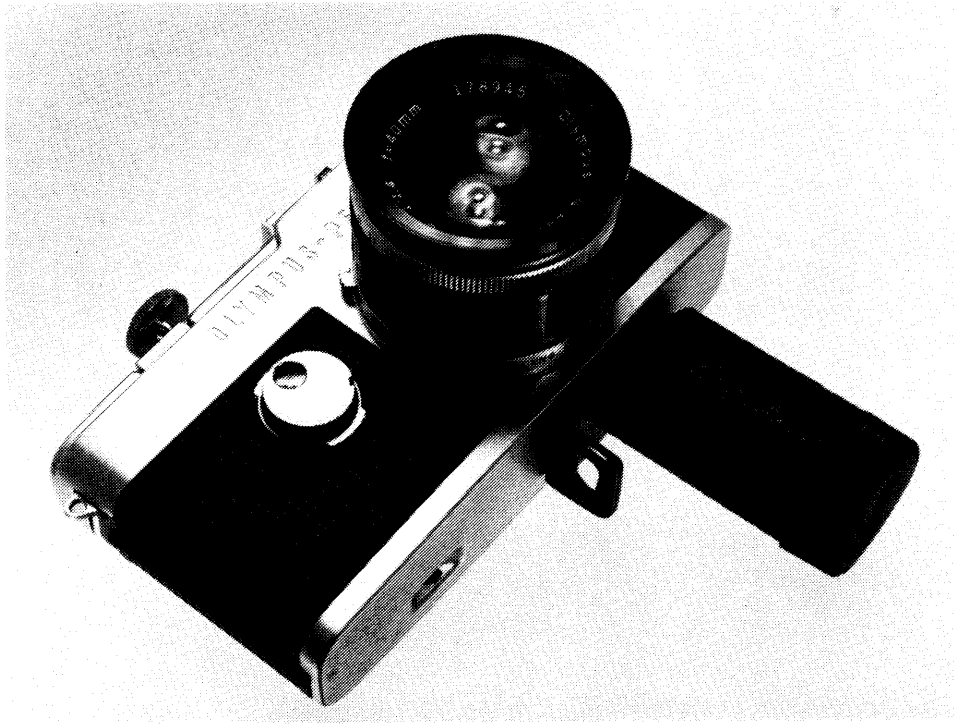
But sometimes the camera release button wobbles in its frame, and then sticks and temporarily jams against the wall of its well when the soft release is used. If you peer down into the cable release hole, you will find a small slotted screw just below it. By reaching down through the hole gently turning this screw counterclockwise with a narrow jeweler's screwdriver, you can bring the top of the screw up until it is flush with the bottom of the cable release well in the shutter button. Usually this adjustment will cure the camera's release from excessive wobbling. Be careful not to bring the screwhead too high; if you do, the camera mechanism will always be in a slightly prereleased state, and the winding gears may jam when you least want them to.

3. Curing the Neckstrap Blues

While the Pen SLRs are neat little cameras, as I'm sure we all agree by now, using them with a neckstrap attached to their lugs is pure torture. Try getting your camera wound quickly! Also, the Pens are sometimes almost too small to hold steady at slow speeds. My answer to these objections is a modification of the Dekkam baseplate neckstrap adapter, which I introduced in a "Dekkam File" article in *Shutterbug* during 1987.

The Pen SLRs are not so heavy as to require two suspension points for a neckstrap. What I prefer to do, therefore, is to make a simple L-shaped bracket, as shown in one of the illustrations, with a single neckstrap slot cut into it. This is held to the camera's tripod socket by a handgrip made of a piece of 3/4 inch wooden dowel about two inches long, surrounded by a leather-like piece of material, into which a 1/4x20 bolt has been inset until only about 3/8 inch of its tip extends from the end. On the example shown, a Canadian Mist bottle-cap is attached to the bottom of the dowel for added comfort in my palm. Always make full and complete use of the materials at hand, is what ol' granddad used to say.

Often, as a matter of fact, I use a wrist strap rather than a neckstrap; either can be fitted into the slot, which for conceptual ease has had neither installed in the photograph. The entire attachment can be removed from the camera in a moment by unscrewing the handgrip, whose bolt has had its threads removed from the area immediately above the dowel; it extends through a 1/4x20 threaded hole in the metal "L" so that the assembly will not fall apart when detached. The gripless camera body is thus immediately reduced to its original diminutive size for carrying in a pocket. On an original Pen F, the grip will of course be located much nearer to the wind end of the baseplate, and will snuggle into your right palm instead of your left.



The Dekkam Pen F baseplate neckstrap and grip adapter, mounted on a modified Pen F Scientific Model camera with f/1.4 lens and 43-49mm step-up ring.

4. Filter and Lens Attachment Standardization

43mm filters and other lens attachments, required by most Pen F lenses, are a nuisance to locate these days. My quick suggestion is to buy a few 43 to 49mm step-up rings and standardize on the 49mm filter and lens shade size. Anyway, though, if you acquire a lot of lenses with different outer flange sizes for the Pens you will need several sizes of adapters, and the idea of a single attachment size for all has its merits. You may then want to think in terms of using 52mm or 55mm fittings instead. 49mm can always easily be stepped up again by adding another adapter, but it is the only size to which you can usually find a stepping ring from an original 43mm flange.

5. Adding Some Minor Conveniences

A small addition that I usually make to my working Pens (I do own some collectibles, too) is the addition of a black coding dot to the face of the shutter speed dial directly in front of the 1/60 position. Farsighted as described, I find the numbers on the dial difficult to read, especially in low light. By clearly marking one standard speed, I can easily locate its neighbors by the number of click-stops that I move in each direction away from the accented one. This may seem a minor point, but it can be a great convenience.

I also went through a phase a few years ago of wanting Pens to be black. They surely do look great that way. I have refinished several, one or two of which are seen in the photos that illustrate this series. But essentially this is an affectation; it has little of practical consequence to recommend it, and takes a lot of time. Had it not been necessary to explain the photographs, I would not have mentioned it. Please forgive me. (Nowadays my affectation is to remove the black paint from their engravings and leave the bodies all chrome.)

VIII. ADAPTING NON-SYSTEM LENSES TO THE PEN SLR CAMERAS

Why Do It?

I made my first two adapters to allow the use of non-Olympus lenses on the Pen SLRs early in 1964, almost as soon as I bought my first Pen F. There were, as we have seen, only three lenses then available for the F, and I wanted more. The result was two clobbered-up tubes, one of which allowed me to mount lenses in Visoflex I Leica threads; the other permitted use of Nikon F lenses and still remains in my collection, a bedraggled and now totally useless thing indeed, of no beauty at all.

In those days there were still no T-mounts or other small accessories with Pen F flanges. I beat up my own flanges for those first two adapter by modifying the Leica thread flange, which is nearly the same diameter as that of the Pens. These things held, but not securely, and I was as glad as anyone else when the Olympus lens and accessory array was augmented.

At that time I was in fact using the Nikon F system for most of my work as a professional photojournalist, and the idea of the plunger-type adapter that will be discussed in the next chapter first occurred to me not much later. I made the original example of that type then, and used it for some time on an on-again, off-again basis without much thought of expanding my Pen SLR system any farther.

Indeed, I did not again turn seriously to the thought of lens adaptations for the Pens until 1980, by which time newer optical design and construction concepts seemed to me to suggest that the use of contemporary lens equipment would result in benefits to my single-frame photographs.

There is no doubt that employing lenses which have been made in the last decade can improve the quality of the negatives that you will produce on the single frame format. Advantages like multi-coating and enhanced designs favoring acutance were not a part of the Pen F optical program. Pen SLR lenses were very good — in some cases outstanding — for their day, but newer designs tend to be even better, despite not having been created with single-frame use in mind.

And there were always some gaps in the Pen SLR lens array, as well as a number of specific lenses of which few examples were ever marketed. If you want to toy with macro capability, very wide-angle coverage, shift optics for perspective correction, better than 2:1 zoom capability, or long telephotos for your Pen SLR, you are almost inevitably going to have to resort to lens adaptations.

Nowadays, if you have decided to experiment with using the Pen SLRs for serious play or even actual work, the odds are that you already have lenses belonging to another system: Canon, Nikon, Yashica/Contax, Minolta, Pentax, or whatever. Also, it is no longer easy to acquire the full range of Pen SLR lenses that you might like to use, even if their optical quality is still acceptable to you. Why not try to adapt what you already own to the Pen system?

There is, you will quickly notice if you get into this sort of activity, one large drawback to the Pen SLR lensmount: the lens release mechanism is incorporated into the lens rather than being located in the camera body. This fact means that you must allow access to the Pen SLR lens release button or tab in any adapter that you make, and also allow for the space that the inner spring needs in order to do its job correctly.

You must also consider the fact that some lenses, such as Canon's, were sprung in the same way as the Pen SLR lenses themselves: they remain wide open until their stop-down tab is pushed aside by the camera body's lens automation lever. Such lenses are mechanically more difficult to adapt with satisfying results than those by Nikon, Minolta, and the others mentioned above; the latter are sprung so that they close down to their smallest aperture at rest.

But most of these problems can be avoided, subdued, even solved. The sections that follow, in this chapter and the next, are intended to serve as suggestions, based on my own experience, to guide you if you believe that this sort of activity would be attractive given your own personal objectives in single-frame photography.

Adapter Types and Commercial Adapters

There are at least four ways in which you can do about making non-automatic adapters that allow the use of lenses from makers other than Olympus on the Pen SLR camera family. While most of the discussions that follow deal only with four lens families — Leitz Visoflex, Nikkor, Contax/Yashica/Zeiss, and Canon — one or another of the principles suggested can be modified, after some careful consideration, to work with almost any recent lensmount group.

The easiest of the four adaptation methods, of course, is the use of the adapters that were commercially available during the sales lifetime of the Pens. We have seen that Olympus made adapters that allowed the

use of lenses in Nikon F, Olympus OM, Universal (Pentax) Thread, Exakta, and Leica Thread mounts on the series of Pen SLR camera bodies. All but the Leica adapter allowed use of these lenses throughout the range between infinity and close focus.

Other makers also sold various adapters for the same purpose, covering at least the Exakta, Nikon F, and Universal Thread mounts. T-mounts for the Pens were widely available as well. It is not difficult to find at least a few examples of various among these adapters today, made by Olympus or others. Pretty surely you will begin your career in lens adaptation by finding an example of one of the Olympus or other commercial adapters and seeing what happens next.

If you like, you can go farther by combining adapters. Nowadays, for example, you can easily find a unit that allows you to put Hasselblad lenses on a Nikon. By combining this with any Nikon to Pen SLR adapter, you can use Hassel lenses on your single-frame camera, should you want to do so.

I should also add a word about the Olympus adapter for Leica thread-mount lenses. While it is true that such lenses in rigid mounts will not reach infinity focus on the Pen SLRs, this is not so for the 50 mm lenses in collapsible mounts. By partially retracting the barrels of such lenses, they can be made to reach infinity.



Pen FV with Leitz Elmar 50mm f/2.8 mounted via the Olympus Leica adapter; lens is not fully extended, as explained in the text.

I have used both Elmar f/2.8 and Summicron f/2.0 in this way, usually attaching a strip of Dymo tape to their barrels in order to stop their collapse at the proper infinity orientation. The layer of tape also makes it impossible for you to collapse the lens completely, thereby possibly saving the mirror in your Pen SLR from a very nasty accident. And because the barrel can be extended, you will find that you also have the advantage of a lens that can be used without accessories for macro work as well as distant subjects. You must be careful, however, to use a lens whose barrel fits snugly into its focusing mount; there will be no bayonet lock to insure parallelism between optics and film with the barrel only partly extended.

If you have progressed to the stage of discontent with the results available from commercially available adapters, however, you must then consider what alternatives remain. At this point you will enter the realm of doing at least some of the work yourself, or having it done especially for you. Here the three further types of lens adaptations come into play.

The first, and easiest, is a simple combination of existing male and female lens flanges of whatever sort you choose, with no further frills. This method is illustrated in the discussion that follows about adaptations involving lenses in Leitz Visoflex II mounts. By extension, you could apply the same ideas if you wanted to adapt lenses from medium-format systems instead of the Visoflex-adapting Leitz flange specified in my description.

The final two types, considered in the following chapter, are for folks who want to be able to use lenses from recent full-frame 35mm SLR systems, with the facility of being able to focus and compose their photographs at full aperture, yet quickly close the lens diaphragm to taking aperture just before the picture is made. One involves a plunger principle, the other is based on lever operation. Neither is actually automatic in operation, but — depending on the lensmount with which you are dealing — you can in fact supply one principle or the other to a number of recent mechanically-operated lens systems.

A Cautionary Note Reiterated

If you are not experimentally inclined, or if you have neither ideas about nor skills with basic metalworking, what comes next may be of little use to you unless you have a friend, or a friendly machinist, who is willing to help you to experiment. Please do not try to make any of the more involved adapters without carefully considering the possible consequences of a mistake. In most cases, the only loss will be your time and the building blocks with which you have begun, but if you get into adapting lenses like those for the Canon FD mount or the Leica R-series cameras, there is a possibility that you may damage the lensmounts if you do not proceed slowly, carefully, cautiously.

Appendix D goes into some detail about the supplies you will need in order to make the sorts of lens adapters that we shall be discussing here. You should read it carefully before even thinking about beginning on your own. Judge your skills against those that seem to be called for; but obviously many of you will be far more skillful than I am.

With the caveat about using extreme care uppermost, then, here are a few ideas that you may want to follow up if you or a friend has the skills to pull them off. By and large, the three methods that follow are divided by ascending order of difficulty: the Visoflex-style is very unlikely to get you into any sort of trouble, the Plunger Adapters probably will not if you proceed carefully, but the Lever Adapters may cause some headaches before you get them right.

Visoflex and Visoflex II Lenses

This is an easy adapter to make, and if you own a few Visoflex-mount lenses, which include those by Kilfitt, Canon, and other producers in addition to Leitz, it will enable you to take advantage of their often fine quality at low cost when doing telephotography with the Pen SLR system. So far as I can see, there is no way that you can ruin either your Pen SLR or your Leitz lens if you make a mistake on this one, and it is very useful.



Modified Pen FV with short-mount 90mm Summicron for Visoflex mounted via an adapter made from a T-mount plus Leitz 16469 tube.

All that you will need is a Pen SLR T-mount combined with a standard and easily available Leitz No. 16469 extension tube, plus three flat-head 2-56 bolts about 3/4" long, and some shim material. This is not only an easy adapter to make: it easily illustrates the general principle involved: combining a fitting that contains the female flange for the lens system with which you want to work with a male Pen SLR flange. Since with

the Visoflex lens to Pen SLR adapter you do not have to cut down the T-mount and can use lenses with focal lengths from 65mm to 800mm or more, I suggest that you might do a great deal worse than to start right here.

Remove the inner threaded T-flange ring from the front of the T-mount by undoing the three small setscrews that hold it in place. Carefully mark which is its front surface. Then, alternately, remove three of the six screws that hold the front flange of the Leica tube, leaving the three intermediate screws where they are. Drill out the three now-empty holes in the Leica tube from front to back so that a 2-56 bolt will just slide down into them.



The Leitz 16469 tube and T-mount used for the Visoflex lens adapter.

Hold the 16469 tube against the front end of the insert that you removed from the Olympus T-mount. Probably the three bayonet claws on the tube will prevent it from sliding into the T-flange; if so, you will have to remove some of the material from the edges of each claw until the tube's end will slide snugly into the flange.

Next, line up the T-flange with the Leica tube and mark the places on the front surface of the flange where the holes that you drilled into the tube meet it. Separate the two pieces and drill and tap the flange at the three spots that you marked for your 2-56 bolts.

You will have to countersink the recesses in the front ring of the 16469 tube in order fully to sink the heads of the bolts. This is a job that requires delicacy, since the ring is thin and can easily become distorted. Use caution, and if you have either, a drill bit or other cutting implement whose speed can be carefully controlled. Don't drill too deeply: just enough so that the heads of your bolts will be flush with the ring.

Now bolt the 16469 tube to the T-flange ring. If the ends of the bolts stick out far enough so that they will not let the flange sink fully into the T-mount shell, cut them off enough to do so. Because you will need some extra length later, however, do not cut them flush with the back of the flange ring unless you must. Put the three setscrews back into the outer shell, and tighten the new assembly into the shell with the top of the camera in line with the top of the adapter.

Now you have assembled your own very first Pen SLR lens adapter. It wasn't very hard, was it? But when you put a lens onto it and look through the camera, you will see that the lens is focusing somewhat "beyond" infinity. This makes no practical difference except that it robs you of a small amount of close-focus range.

To remedy the situation, if you want to do so, you can insert some shim material between the Leica tube and the T-adapter in order to get the infinity focus just right. You will not need much, and it can be made out of anything usable at hand, such as circles cut out of the plastic lids from a cheese package or coffee can.

Choose a truly distant object as a target, and inspect its image carefully on your groundglass, using the longest lens you own with its aperture wide open. When you get the depth almost right, your final shimming can be done with paper circles. Now you see why I did not want you to cut those bolts any shorter than necessary; their extra length will be absorbed by the thickness of the shimming. You can make a final assurance check on film after everything looks just right, and then do any final shimming or deshimming that seems appropriate. If you get a longer lens later, you can always take the unit apart and readjust it if this step seems necessary.

Make sure you have everything lightproofed before you make serious photographs with your new adapter. If you have been a careful assembler, though, there should not be any major leaks unless you used translucent shim material. If so, darken it with flat black paint. As assembled, this unit will work with the Visoflex II lenses directly; to use the older Visoflex I types or the ones by such makers as Canon and Nikon, add one of the adapters that Leitz supplied for this purpose, such as the ubiquitous OUBIO. The Kilfitts, whose back

focus is just a little longer than that of Viso I lenses, should never be used as templates for this operation!

These Visoflex II adapters, of course, are like all the commercially marketed Pen SLR lens adapters in that they do not permit automatic or any other kind of diaphragm coupling between the camera and the adapted lens. With a mirror lens this is no problem; with others it may be, particularly if you are using the relatively dark finder in an unmodified Pen FT.

And, as we have also seen, the old adapters that were available over the counter covered a limited range of lenses. Who wants to use optics in an Exakta mount these days? As a matter of historical fact, though, my first article on lens adapters for the Pen F, written more than 20 years ago, showed how to make an automatic diaphragm adapter to use between the Pen and then-current Exakta lenses. There was no way that this adapter could damage anything, although it did involve a minor and reversible modification to the release plunger on the auto lensmount.

While the suggestions that come from now on do not deal with automatic diaphragm operation, they do, however, involve two reasonably useful substitute ideas.

But from this point forward, please keep firmly in mind my earlier warning about the possible consequences of messing with the equipment!

IX. ADVANCED ADAPTER TYPES

The Brighter Image

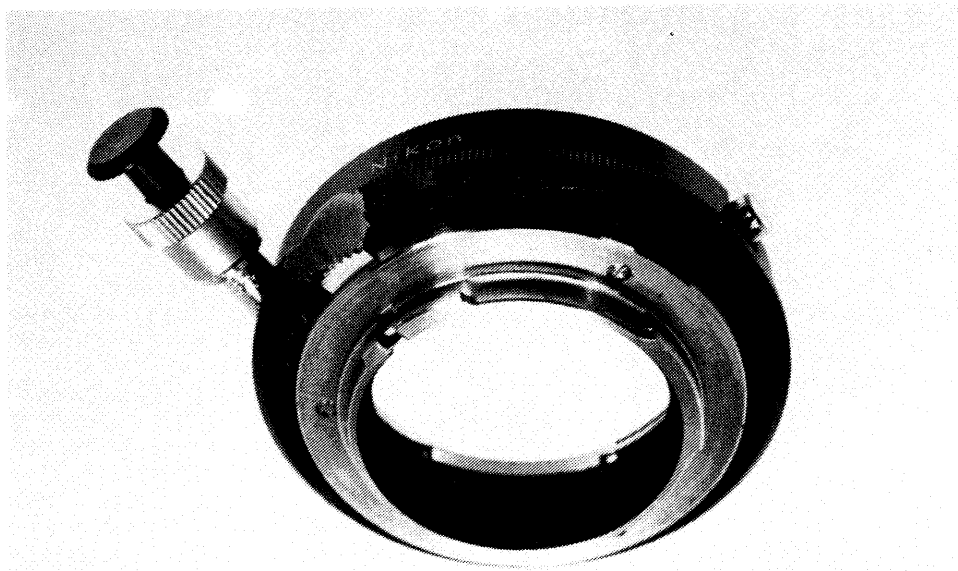
Sooner or later, you will find yourself wishing that you could focus and compose your photographs, using adapted lenses, with the diaphragms wide open. This inability is the Achilles' heel of the commercially available Pen SLR lens adapters as well as the Visoflex unit described in the last chapter.

For a while I was stumped by this problem. Preset lenses in T-mounts were at best a very marginal improvement over just plain manual operated ones, especially since few of the inexpensive preset lenses seemed to abound in the ingredients that result in superb quality.

Eventually I stumbled on an answer. Inspired by the sudden realization of what might be done by using a part then available commercially from Nikon, I made my first plunger-type adapter. More recently, I have used the same principle in order to mount lenses in Contax/Yashica flanges to my Pens.

Nikon in the early days of the F used to market a widgeit named the "E" close-up ring; they later improved it into the "E2" ring. This was before the days of auto extension tubes, and they cleverly incorporated a plunger assembly in the ring that, when you push it, will open the lens diaphragm all the way for focusing ease. When you release the plunger, the lens closes again to its preset aperture. This was what gave me my original idea.

Plunger-Type Adapters for Nikon Lenses



Close-up of Nikon plunger adapter from rear, showing how the Pen ring was fitted into the Nikon one.

I suppose that E and E2 rings have gone the way of the pterodactyl, but at a large Nikon dealership you will probably still be able to find a few, perhaps even a few unused ones, tucked away in a dark corner of the obsolete accessory drawers. If you combine one carefully with a cut-down Pen SLR T-adapter, you have a device that allows you to focus and compose with a wide-open Nikon F lens at all distances to infinity; by releasing pressure on the plunger in the instant before you make your picture, the exposure will be made at whatever aperture you have preselected.

The photographs show several versions of this accessory. You may notice that I have sometimes used part of an Olympus Pen SLR Lens Adapter at the rear rather than a less expensive T-mount, largely for two reasons.

First, the Olympus flange is chromed steel or brass rather than the aluminum of the T-mount, and thus their adapters have been better able to withstand the repeated use that they have in fact had over the years. Second, the lens unlocking tab on the Olympus ring is flatter than the button assembly of the standard T-adapter and can better be incorporated into the final assembly. But I have also used a T-adapter for the same purpose (I have four of these home-made gadgets in all), and by cutting a well into the portion of the E-tube that rests next to the lens release button in the cut-down T-mount, an adequate clearance can be achieved.

The E2 ring is a better choice than the E ring, if you can locate both, because its plunger is threaded to accept a Nikon cable release. This facility could also be useful if you are working on a tripod with a long telephoto, but I find it better because I can attach a Nikon-configured soft shutter release to the end of the plunger. Doing so extends it a little more conveniently, and also gives a broader surface against which to push.

Most of the forward part of the T-mount will have to be cut away as your first step. It is best at first to leave a little more than you think you will need; you will file it down to fit snugly a little later on, while you are establishing exact infinity focus and parallelism.



Three completed Nikon plunger adapters, showing possible configurations.

You can eyeball the approximate amount of shortening necessary: hold the naked lens in front of the naked camera body, and measure the apparent distance between them when you get a reasonably sharp image of a distant subject. Allow a millimeter or so extra for insurance before you shorten the T-adapter. Then remove the rear flange from the E-ring. Machine or cut away enough of the ring's interior wall so that the T-mount will slide into the ring.

Next you must determine how you want to orient the lens to the camera. If you locate the parts of the assembly in a relationship that puts the lens scales on top, the plunger will extend out and down at an awkward angle and must be worked with the ring or little finger of your left hand, which is also the focusing hand. When you use a long lens, easy plunger action becomes all but impossible. Therefore, I learned, after several false starts, to orient the assembly so that the plunger extends at about the ten o'clock position as seen from the front.

This adjustment puts the plunger in an ideal location to be worked with the middle finger of your right hand while the right forefinger works the camera's shutter release. Once you have settled on an orientation that suits your own predilections, fashion a tapered well in the back of the E-ring that will allow access to and room to reach the T-mount's release button. Carefully holding everything together, put a lens on front and a camera on back. You may have to enlarge the outer diameter of the T-mount with tape in order to get a snug fit. Next, see how infinity focus looks by working with a very distant subject that has distinct lines.

You will have to cut away some more from the front of the T-mount, or perhaps later even shim things a little if you were overzealous, in order to get the exact depth needed. Final determination should be made with the camera firmly mounted to a tripod. Once you have it exact, check your assembly for parallelism with a micrometer or caliper, or an adequately accurate substitute if you lack both, and adjust so that everything is exactly in place and infinity is infinity over the entire film plane.

Only after all has been trebly or quadruply confirmed should you join the two rings permanently with three or more small bolts, perhaps my standard 2-56 size, being sure not to run a bolt accidentally through the plunger housing area. An easier alternative, if you have achieved a snug fit, is epoxy or an equally strong bonding agent, but only after you are absolutely sure that everything is absolutely perfect.

Check the interior against light leaks, blacken any bright parts in the light path, add whatever finishing touches you like (one of my Nikon F lens adapters, for example, has a tripod socket on the bottom), and do your final

smoothing and painting (and epoxying, too, if this has been your adhesive choice) after you have confirmed everything one last time by a practical test with film.

If you oriented the two pieces of the assembly as I have suggested, you will have found by now that the focusing and aperture scales on the lens are near the bottom of the adapter, not the top. Since I focus on the camera's viewing screen, as I'm sure you do too, I don't care about the invisible focusing scale; and it is easy to solve the aperture scale problem simply by making a small indexing line and auxiliary scale on adhesive paper and locating them near the new top of the lens, where they can be seen. Once you have it right, cover the scale with Scotch tape or self-adhesive acetate in order to keep it from smearing.

In Appendix E, you will find directions for making still another Nikon F-mount lens adapter. It is not necessarily easier nor better than the one we have just discussed, but it uses a different Nikon accessory as its starting point and provides a less extreme relocation of the lens scales. Either the plunger type that we have explored here or the lever type in the appendix will do the job for you. Lenses in Nikon mounts are in bountiful supply, and if only for this reason they are perhaps the most rewarding types to use with your Pen SLR camera.



Vivitar 135mm f/2.3 in Nikon F mount on modified Pen FT via Nikon plunger adapter.

Plunger-type Adapters for Contax RT System Lenses

I own a bunch of these lenses as a result of my Contax enthusiasm. Had it not been for their size and weight, I would have worked out a Pen adapter to use the Zeiss lenses for the Contaxes much earlier than I finally did.

Because the Zeiss lenses' diaphragms, like Nikon's, are sprung so as to close down when off the camera, the plunger system can be applied; and in fact once its design has been figured out properly it works even better than was the case with Nikon lenses. I was so confident of my concept before starting that I dared make photographs during construction of the initial adapter.

The differences between the Contax and Nikon adapters result from two factors: the position of the stop-down levers on the lenses from the two systems, and their direction of operation. On Nikkors, the lever is at the right side of the mount and moves upward to the right; on Contax lenses, it is at the bottom and moves toward the left, the opposite direction. On the Nikon adapter it was necessary to have the plunger of the adapter unit sit fairly flat across the top of the adapter, but on the Contax one of the plungers can be mounted much more vertically and operated with downward pressure of the right-hand middle finger, a more natural process.

In order to have the Contax lenses oriented with respect to the camera so that up is up on both, a short intermediate curved spacer must intervene between the end of the plunger and the stop-down tab on the lens. I made this from a curved strip of flat spring metal, bent to shape at either end so that it would properly transfer the downward pressure of the plunger into a horizontal pressure on the lens lever. When the plunger is pushed down, pressure on the lens lever opens the diaphragm for accurate focusing and easy composition of the photograph. When pressure is released, the natural close-down action of the lens mechanism pushes the intervening flat metal strip back out of the way.

The plunger itself is a portion of the operating end of a cable release, cut to the proper length, strengthened with epoxy, and epoxied into a hole cut into the adapter. The basis of the adapter itself is, depending on which you can find, either an OM-to-Pen lens adapter cut down to shape or a Pen T-mount, also cut to shape, plus a shortened Contax-mount extension tube with its internal coupling parts removed. You can use other flanges instead, if you can find ones that can be fitted together.

In the several adapters of this kind that I have made, a natural groove forms between the rear cut-down camera fitting and the Contax flange, and the metal strip slides back and forth within in this groove. Since the plunger retains its original cable release operating spring, there is very little back-pressure to stop the lens from closing down when pressure on the plunger is released, and the combination works well.

Contax lenses tend to be larger and heavier than many units of similar specifications from other makers. At first one might say that this fact militates against the whole Pen SLR principle: a small, light-weight photographic companion. But at least part of my involvement with the Pen SLRs is based on the esthetics of the format, as I have explained earlier; thus I find the use of the larger lenses no impediment to my enjoyment of the system. The results that are achieved make the effort worthwhile.

Lever-Type Adapters for Canon FD Lenses

The Canon lensmount in its basic Canonflex-R form was in use even before the Pen SLRs were introduced, but because of the short flange focal length of the Canon system and the fact that several of the signaling arms on the rear face of its newer FD-style lenses extend well away from the base of the lens flange, it is the most difficult among all the adaptations that I have attempted to do. If you try to make a Canon adapter of the plunger type, the Pen lensmount's release button and especially the inner housing of its associated shaft are very likely to foul one of the signal tabs that extend back from the rear face of the Canon lens.

Yet another difficulty is that recent FD-mount Canon lenses are so sprung that their diaphragms cannot be adjusted properly without pressure on the principal operating tab at their rear surface. This necessitates making some form of locking arm even if you plan a simple lens-to-camera adapter without any plunger linkage at all. Mounting the lens to the adapter, you will find, requires an entirely different procedure from that used on Canon cameras. First the lens arm must be engaged against the locking arm; then the lens must be swung backward through a short arc before its bayonet fittings will mate with those of the adapter.

You can work up a go-between that will allow use of the Canon mirror lenses and the superb tilt-shift 35mm on your Pen SLR if you want to do so. These lenses have no diaphragm coupling linkages, and adapting them presents many fewer problems and dangers. The principle is the same as that used for the Visoflex adapter discussed in the previous chapter.



Parts of the Canon lens adapter. From top left, more or less clockwise: the short Pen F extension tube with part of its front circumference cut away to allow passage of the operating arm; the basic shell, made from a shortened Vivitar extension tube for the Canon FD mount, with spring anchored near the inner top; (center bottom) the actual operating lever, a circular piece of brass shim stock with an operating arm, a catch (just inboard of the arm, and hard to see since the whole part has been blackened) for the spring's other end, and a lug at the bottom to operate the lens' close-down lever; and the finger rest for the operating arm with its two retaining screws.

Simply wed a shortened female Canon flange, perhaps from an extension tube or a reverse T-fitting, to a cut-down Pen F T-mount adapter, and forget the plunger linkage entirely. Once you get the depth of the combined unit properly adjusted, your manually-operated Canon lens will give you first-class results.

There is another type of adapter you can make, though, which works in the same general way as the plunger

adapters, but is more versatile in its applications. I call these ones lever adapters. For auto-diaphragm Canon lenses, at least, building them depends on lucking into a set of the relatively scarce Pen F extension tubes and being willing to butcher them so far as their original purpose is concerned.

As the photos may suggest, the central linking element of this sort of adapter is a flat circular ring with an arm extending outward to which the lever's finger rest can be attached, a protrusion to hold one end of a coiled compression spring onto the ring near the point where the arm joins it, and a lower built-up lug that will engage the diaphragm control arm of the lens. I make my rings of .025 gauge brass shim stock, which is about the widest that will allow the lens arm to clear the adapter and also slide in the groove that will shortly be described.



Canon lens to Pen F adapter by itself. The club-shaped protrusion near the bottom is the lever necessary to lock the adapter to the camera body, and is inset into a corner of the tripod support bracket.

This lever-style adaptation is the only one I have been able to devise that will allow fitment of automatic-mount Canon FD lenses to the Pen SLRs, and also permit you to focus and compose with the diaphragm wide open. The following discussion will take you through the process by steps.

First, you have to combine a Canon female lensmount fitting with one of the threaded tubes from the Olympus extension set. I used the smallest Olympus ring, plus a cut-down tube from a Vivitar Canon extension ring trio, and aligned them carefully in conjunction with the rear fitting of the Olympus set in order to position the lens scales at the top of the finished unit. The Pen tube should be worked down so that it will dovetail within the rear end of the Canon tube. Both will have to be shortened. Getting the proper length of the combined tubes is a matter of trial and error; once you are close to the correct depth for the combined unit, remove only a little metal from one tube or the other at a time, checking your infinity focus after each step.

When you have it right, check the combined pair for absolutely uniform front to back length with a micrometer or reliable calliper, then join the threaded Olympus ring and the Canon tube permanently. I used both epoxy and 1-72 bolts in order to insure a tough assembly, doing my final infinity and caliper checks after the epoxy had hardened but before the bolt-holes were drilled and tapped.

If you leave the adapter alone at this point, you will have a unit that, when it is screwed into the Pen SLR body coupling ring from the extension tube set, allows you to mount Canon lenses onto your Pen SLR body. But it will not give you any control over the f-stops on any of the auto diaphragm lenses, because as we saw in the last chapter Canon lenses inhabit a world of their own when it comes to auto-diaphragm operation. This is where the flat brass ring comes into play.

You will discover that when the Olympus tube is firmly screwed into the camera fitting ring from the tube set, there is a small group gap between the end of the tube and the face of the fitting. This gap makes a groove in which the .025 brass stock can move freely. You shape the outer diameter of the brass ring to fit into this groove, leaving a protrusion about 10mm wide and 50mm long as the basic arm piece. It will be finished to suit after the hard work has been done. The inner circumference of the ring should be made just a bit wider

than the light-path opening on the Olympus fitting, and again a protrusion should be left, facing inward this time, which can be bent back to form an arm to hold the spring.

The lug that engages the lens diaphragm arm can be shaped by cutting back some of the ring's width, bending it into position, and securing it against hard use with a liberal application of solder. In fact, both the spring arm and the diaphragm lug can be made individually and then soldered into place (a beauty of working with brass!), but I chose the extra solidity that comes with making everything from a single piece of stock, then using solder as a strengthening agent. Of course, I ruined a couple of trial pieces before I got it right.

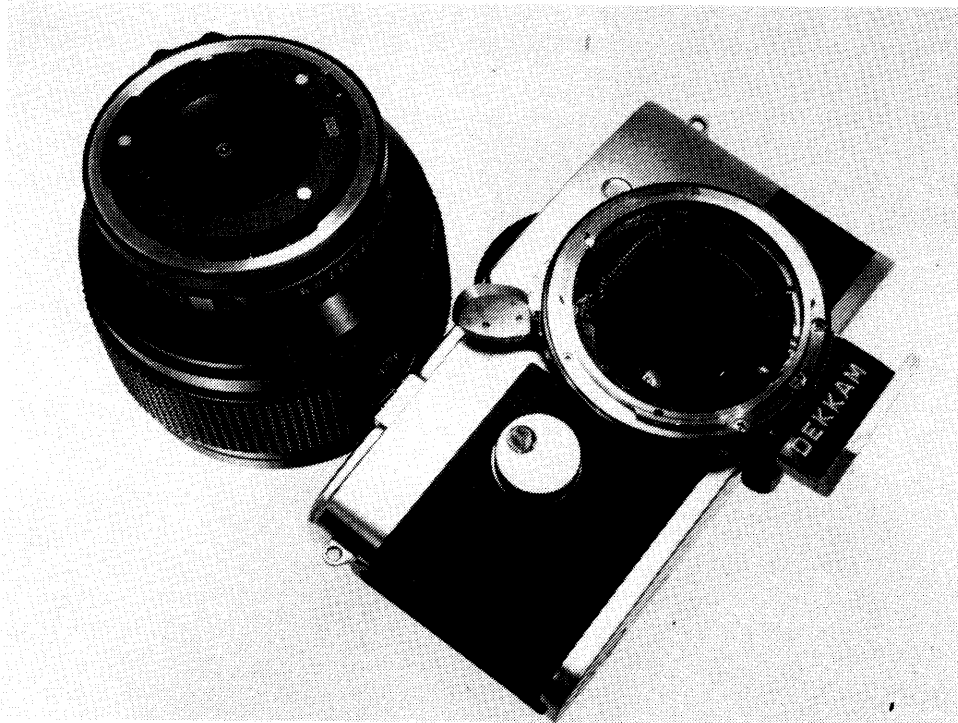
You will have to remove from the camera fitting about 20mm of the forward-facing ridge in its front side wall in order to allow the flat brass ring's operating arm to extend outward from the adapter. Later, find a way to make sure that this narrow gap is adequately light-proofed.

Next, find a small coil spring whose retractile pressure is enough to activate the lens's diaphragm arm; this requires a good deal more strength than you might expect. Make sure the spring diameter is not so large as to foul the rear face of the lens flange, blocking the spring from expanding and compressing and also possibly damaging the lens.

Mount one end of the spring to the lug that you fashioned (I drilled a hole in the lug to hold it), and devise an anchoring fitting at the proper distance around the top of your adapter sleeve to hold its other end. As the photos show, the spring when installed should lie across the top arc of the adapter throat, above and out of the way of the light path between lens and film aperture.

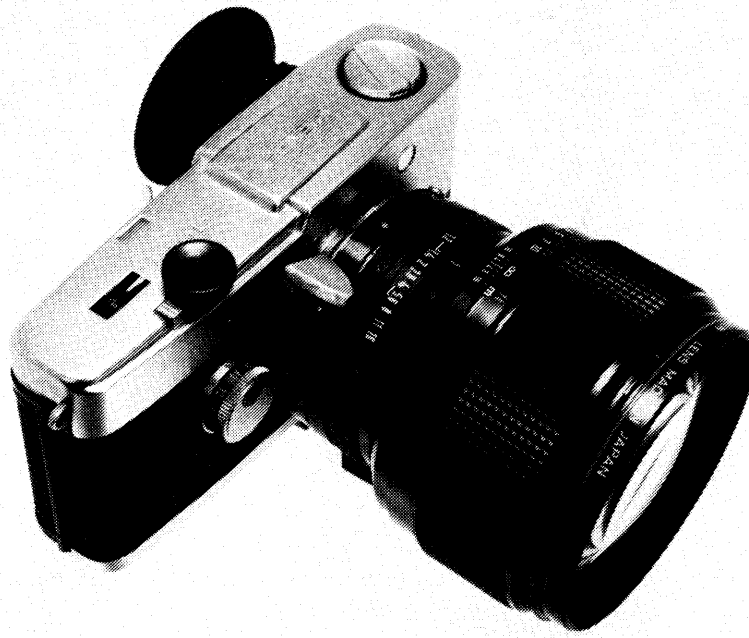
Now, once you have trialed and errored your way into an arrangement that works, you will find that the spring pressure exerted on the lug of your ring will hold the Canon lens diaphragm closed to whatever working aperture you want, while downward pressure on the extended arm will open it up to full aperture for focusing.

The rest is just a matter of finishing up. Make a comfortable operating tip for the lever and bolt it on. Light-proof the slot and darken the brass ring. I added a tripod fitting. The vertical section of this external tripod assembly also retains a plastic arm, rotating through 90 degrees, that locks the adapter to the camera body; you may recall that there is no lensmount lock on the Olympus extension tube set itself.



Pen FT and Canon lens separated, showing the adapter on the camera, with its coil spring running just above the light path cutout of the camera.

A great deal of cumbersome detail has been left out of this description; I assure you that if you try making this adapter, you will find that it is not as easy as it may have sounded. But I have already warned you to stay away from Canon lenses unless you are willing to work hard and take your chances. If you are patient, this suggests one way that the job can be done.



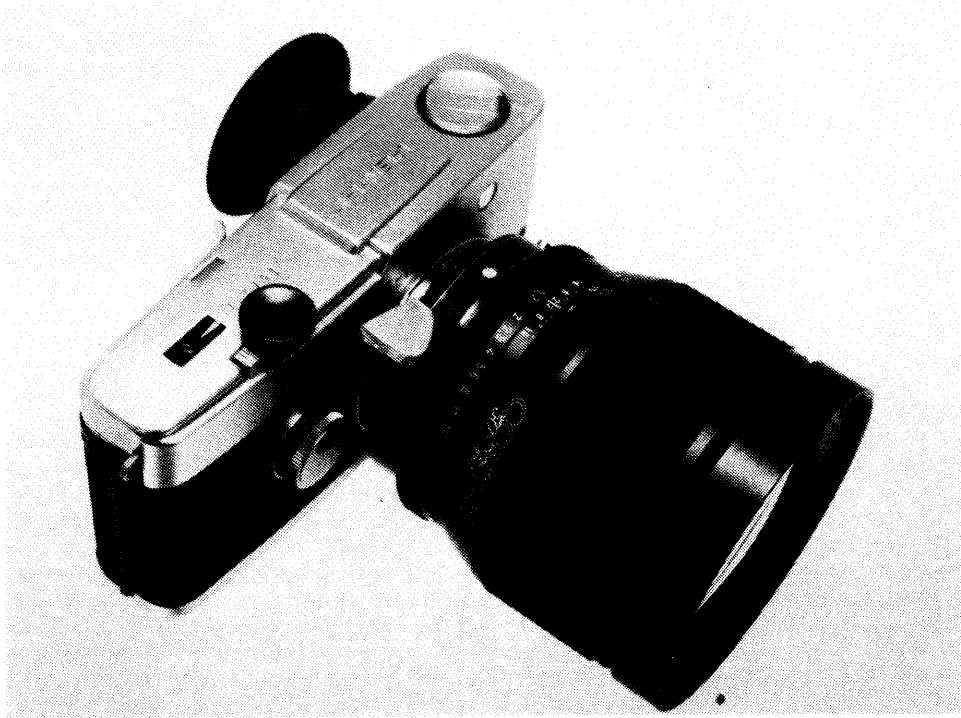
Canon 85mm f/1.2 FD lens on modified Pen FT via the lever adapter.

Contax RTS Lenses Revisited

The illustrations also show another Contax RTS adapter. This too follows the lever principle, though in the case of the Contax unit the spring is designed to get the lug on its operating ring out of the way of the lens's diaphragm control lever when pressure on the lever tip is released. This process allows the lens to close down under its own spring pressure. The Contax unit shown was built from a combined Olympus OM lens to Pen F adapter and Cambron/Contax extension tube, but I have a similar unit made like the Canon one from a basic Pen F extension tube set. I enjoy using the plunger adapters for the Contax lenses, but I enjoy the lever-type ones even more.



Contax RTS to Pen F lever adapter, similar in concept to the Canon FD one.



Modified Pen FT with Zeiss Contax 85mm f/1.2 Anniversary Sonnar mounted via a lever-operated adapter very similar to that for Canon lenses.

The results gained are identical, however. The lever-type is the only answer I have found for Canon lenses, but for lenses from many other systems either type can be worked out. Suit your own skills and preferences!

Tamron Adaptall Lenses

Many of us, of course, do not use the Nikon, Contax, nor even Canon systems as first choice, and thus do not have these lenses lying around; not will we necessarily want to invest in even a limited set of them just for Pen F use. One answer to this problem is the use of Tamron's fine Adaptall system. If you are into, say, Pentax cameras, you can buy an Adaptall lens with both Pentax and, for instance, Nikon mounts, and switch back and forth as the spirit moves you, assuming you have made the plunger-type Nikon adapter or are willing to work with one of the old commercial non-plunger adapters for Nikon lenses.

Or, if you have made one of the other suggested adapters, you can substitute an Adaptall fitting for that sort of lens. The only problem you may experience is that Tamrons are often larger and heavier than similar lenses from other makers; you will have to balance off the one form of convenience against the other.

A Word About Zoom Lenses

Now, let's go back for a moment to our discussion about really working with the Pen SLRs. Consider the use of contemporary zoom lenses. This is an attractive proposition because the edges of the double frame image, usually the softest parts of a zoom lens's coverage, do not register on the single frame. One of the truly versatile units, covering maybe 28mm to 200mm, is a genuine giant on the Pen F, with double frame equivalent focal lengths between 40mm and 280mm. But if you decide to go this route, make sure you find one whose central image is sharp enough for the extra enlargement necessary with the smaller film size.

More important, if you do choose a zoom lens with which to work, is to remember that often such lenses have smaller effective apertures at the long end of their zoom range than at the short end. You are not talking automatic through the lens exposure when you talk of the Pen SLRs; you will have to remember to adjust your exposure settings every time you make a major change in focal length settings. On the trip to Japan that was mentioned many pages ago, I worked very happily with a Nikon Series E 75mm to 150mm lens whose maximum aperture was f/3.5 throughout. This is by far an easier way to go, if you can find uniform apertures in a zoom lens that otherwise suits your preferences.

For photos of more condensed subject matter on the same trip I used the original version of the Sigma 21-35mm wideangle zoom in a Nikon mount; these, too, were more than satisfactory, especially because the edges of the half-frame format do not extend far enough out to be much affected by the very obvious lack of linear veracity that this lens used to show toward the edges and corners of a double-frame negative. Altogether I took only these two lenses plus the 38mm Olympus Pen macro f/3.5 and the 40mm f/1.4. Everything fitted into my pockets, since the time was winter.

With any sort of adapter of the same general type that has been outlined for the Nikkor, Canon, or Contax units, contemporary zoom lenses can easily be converted to work on the Pens and give you the facility to focus them at full aperture. Someday, too, I may try using one of the self-contained autofocus zooms sold by such folk as Tamron and Vivitar on a Pen SLR. I wonder whether or not they will be accurate enough for their images to hold up under extreme enlargement? If you try this first, please let me know!

That's all I have to say on the subject of using foreign lenses on your Pen SLR: it may be too little for some of you, but it probably has been far too much for many others. By now, however, we should have covered not only aspects of concern to Pen SLR collectors, but also most of the matters that will be important to those of you who aim to become serious Pen SLR users.

The single-frame format may be coming back! Recently an interesting camera named the Kyocera Samurai was introduced in Japan. Kyocera, of course, are the conglomerate proprietors of the Contax/Yashica stable, their name abbreviated from "Kyota Ceramic." In the United States, where the Yashica name is still used on photographic products, the Samurai is sold under this designation.

Although the Samurai is being sold here, its impact may be dulled because of the same situation that finally killed the Pen SLRs. Our photofinishers are not ready for the format, at least not until its use reaches proportions that make it commercially viable. But rumors are rife that at least two other major manufacturers have single-frame SLR prototypes under development. Canon are marketing a pocket camera that gives you a choice of single or double-frame formats, and I have heard it suggested by folk who know that ours could yet become the amateur film format of the future. It makes some slight sense.

But any new reflex cameras, if the Samurai is a typical example, will not be at all like the Pen SLRs. They will, like the Samurai, probably be single-frame versions of the auto exposure, auto focus, zoom lens and built-in electronic flash sort of SLR 35mm camera that has been taking over the market during the last few years.

But they will be good travelers' cameras, I suspect. And if enough attention is paid to them, perhaps some brave company will venture again into what is at least a semi-professional version for more involved photographers. For, despite the fact that I and others sometimes used the Pen SLRs for various professional purposes, this was not really their goal. The Pen Scientific Models were the only ones of them to have been designed for extraordinary techniques; the others were aimed at a broader market.

Thus, a semi-professional single-frame SLR design would satisfy me just fine! All I really ask is that it have exchangeable lenses. I am prepared to take it from there and run.

The discussions we have had here will, I hope, have given you some ideas of your own about how best to fit the classic Olympus Pen F SLR cameras and perhaps a future successor or two into your own scheme of things, if you have decided that doing so offers a potentially rewarding challenge. I hope that you have.

Over the years I have gained immense enjoyment from the Pen system, and more importantly have also made some pretty satisfying photographs, which is what it's really all about.

Isn't it?

XI. APPENDIX

APPENDIX A

Characteristics of the Five Olympus Pen Single Lens Reflex Models

(Dimensions in Millimeters, Weights in Grams)

ATTRIBUTE:	MODEL:	F	FT	FV	F/SM(1)	FT/SM(1)
Length, Excluding Strap Lugs		129	129	129	129	129
Depth, Speed Dial to Finder Frame		43	43	43	43	43
Height, Discounting Rewind Knob		71	71	71	71	71
Weight, Less Lens or Accessories(2)		430	475	445	430	440
Number of Wind Lever Throws Needed		two	one	one	one	one
Shutter Fires w/Wind Lever Extended		some(3)	yes	yes	yes	yes
Focusing Screen Type		plain(4)	micro(5)	micro(5)	aerial(6)	aerial(6)
Exchangeable Focusing Screens		no	no	no	no	no
Exposure Meter Built In		no	yes	no	no	yes
Accepts Clip-On Exposure Meter		yes	no	yes	yes	no
Self-Timer Built In		no	yes	yes	no	no
Flash Synchronization Capability (7)		X	X,M	X	X,M	X,M
Take-Up Spool Slots		one	four	four	four	four
Location of Tripod Socket		wind end	—	all near	rewind end	—
Accessory Shoe Built In		no	no	no	no	no
Finder Frame Slotted for Accessories		yes	yes	yes	yes	yes
Backdoor Removable without Tools		no	no	no	no	no
Can Make Intentional Double Exposures		no	no	no	no	no
Available in Olympus Black Finish		no(8)	yes	maybe	no	yes
Often Found in Olympus Black Finish		no	yes	no	no	always

Notes

- (1) F/SM = Pen F Scientific (Microscope) Model; FT/SM = Pen FT Scientific Model.
- (2) Weights given are of typical unmodified examples in my possession, to the nearest five grams.
- (3) At least some early Pen F shutters hang up, especially with a lens mounted on the camera, unless the wind lever is allowed to return to its rest position; later ones do not appear to do so.
- (4) Plain = full groundglass with no focusing aid installed.
- (5) Micro = groundglass screen with central micropism focusing aid.
- (6) Aerial = black-framed circular unground flat glass with crosshairs.
- (7) M-synch is however also possible at the slower shutter speeds with the models that lack switches on their PC outlets. The models marked "X,M" in this chart have switches that allow full synch in both modes at all speeds.
- (8) Several examples of the original Pen F in black with red lettering have been reported, most from Europe. It is not yet entirely clear whether this was a factory option or a distributor's modification.

Equivalents:

One ounce = 28.35 grams; weights given to nearest 5 grams.
 One inch = approximately 25.4 millimeters or 2.54 centimeters.

APPENDIX B

ORIGINAL OLYMPUS LENSES DESIGNED FOR THE OLYMPUS PEN SLR CAMERAS:

Focal Length (mm)	Aperture Range (f/)	Number of Elements/ Groups	Field of View in Degrees	Closest Focus (cm)	Filter Size (mm)	Weight in Grams
20	3.5 - 16	7 / 6	73	20	43	255
25	4.0 - 16	5 / 5	62	25	43	120
25	2.8 - 16	7 / 6	62	25	43	180
38*	3.5 - 16	5 / 4	43	15.8	43	195
38	2.8 - 16	4 / 3 (?)	43	c.40	43	c.120
38	2.8 - 16	5 / 3	43	26	43	75
38	1.8 - 16	6 / 5	43	35	43	135
40	1.4 - 16	7 / 6	41	35	43	165
42	1.2 - 16	8 / 6	39	35	49	255
60	1.5 - 16	7 / 5	28	80	49	270
70	2.0 - 22	6 / 5	24	80	43	230
100	3.5 - 22	5 / 4	17	150	43	250
150	4.0 - 22	5 / 4	12	170	49	380
250	5.0 - 32	5 / 3	7	350	58	800
400	6.3 - 32	5 / 4	4	500	72	1,750
800	8.0 only	6 / 5	2	1,500	25.5**	2,000
50-90***	3.5 - 16	10 / 8	34-19	150	49	420
100-200***	5.0 - 32	12 / 9	17-9	170	49	700

* Macro lens giving 2:1 ratio at closest focus.

** Inserted into rear portion of lensmount.

*** Zoom lens.

c. = Approximately.

Equivalents and Definitions:

One ounce = 28.35 grams; weights given to nearest 5 grams.

One inch = approximately 25.4 millimeters or 2.54 centimeters.

f/ = focal length of lens divided by its effective diameter.

Elements = number of pieces of optical glass, cemented or not.

Groups = number of single glasses plus cemented glass assemblies making up the total photographic lens.

APPENDIX C

35mm Double Frame Equivalents of Single Frame Focal Lengths:

18x24mm EQUIVALENT DOUBLE FRAME FOCAL LENGTH, Calculated by:

SINGLE FRAME FOCAL LENGTH	Total Area Comparisons: Long Side Ratio	Diagonal Ratio	Context: Total Area Ratio	Reason: 8x10 Format Area	NOMINAL DOUBLE FRAME F. L.
(1:1)	(1.5:1)	(1.442:1)	(1.414:1)	(1.333:1)	(1.4:1)
13*	20	19	18	17	18
17*	26	25	24	23	24
20	30	29	28	27	28
24*	36	35	34	32	34
25	38	36	35	33	35
28*	42	40	40	37	39
35*	53	51	49	47	49
38	57	55	54	51	53
40	60	58	57	53	56
42	63	61	59	56	59
50 w/zoom	75	72	71	67	70
60	90	87	85	80	84
70	105	101	95	93	98
85 w/zoom	128	123	120	113	119
90 w/zoom	135	130	127	120	126
100	150	144	141	133	140
135 w/zoom	203	195	191	180	189
150	225	217	212	200	210
200 w/zoom	300	289	283	267	280
250	375	361	354	333	350
300*	450	433	424	400	420
400	600	577	566	533	560
500*	750	721	707	667	700
800	1200	1154	1131	1066	1120

Notes:

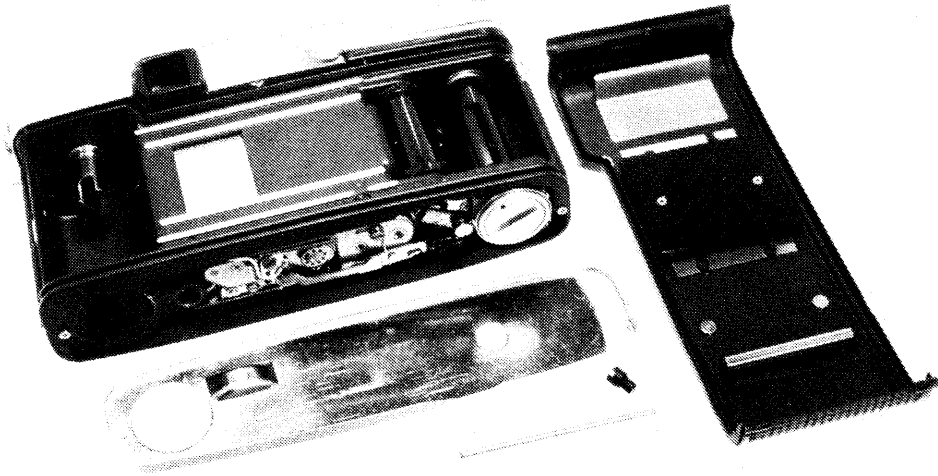
All focal lengths are stated to the nearest number of whole millimeters. The starred focal lengths were not available in Olympus lenses for the Pen F series of cameras. The focal lengths marked "w/zoom" were originally available only with Olympus Pen F zoom lenses. Both starred and "w/zoom" focal lengths, however, are commonly available today with lenses that can be adapted to the Pen F SLR cameras.

APPENDIX D: WORKING ON THE PEN SLR CAMERAS

Removing the Baseplate and Backdoor of the Pen SLR Cameras

There are two reasons to remove the baseplate: to clean the camera or to remove the backdoor. The job is easy.

There are two retaining screws, one at each end of the baseplate. Undo them and carefully lift it off without disturbing the rewind button. Notice how the button is assembled under a retaining clip that is held in place by very minor spring pressure, then remove the button and store it carefully. Nothing else will come loose.



Pen SLR with baseplate and backdoor removed: notice the easy-to-mislay rewind tab and the backdoor hinge pin.

Dust builds up in the bottom for two reasons. One is the rewind button opening. The second is the rather slight overlap of the baseplate and the body casting. Remove what you can with a miniature vacuum, a rubber bulb used in its inhale mode, a Q-tip, or a brush with firmly attached bristles. If necessary you can dab a small amount of lighter fluid or acetone on the Q-tip to dislodge stubborn grime, but use a very minimal amount. Do not flood the works! Also, do not leave detritus from the Q-tip's cotton or the brush's bristles behind when you have finished.

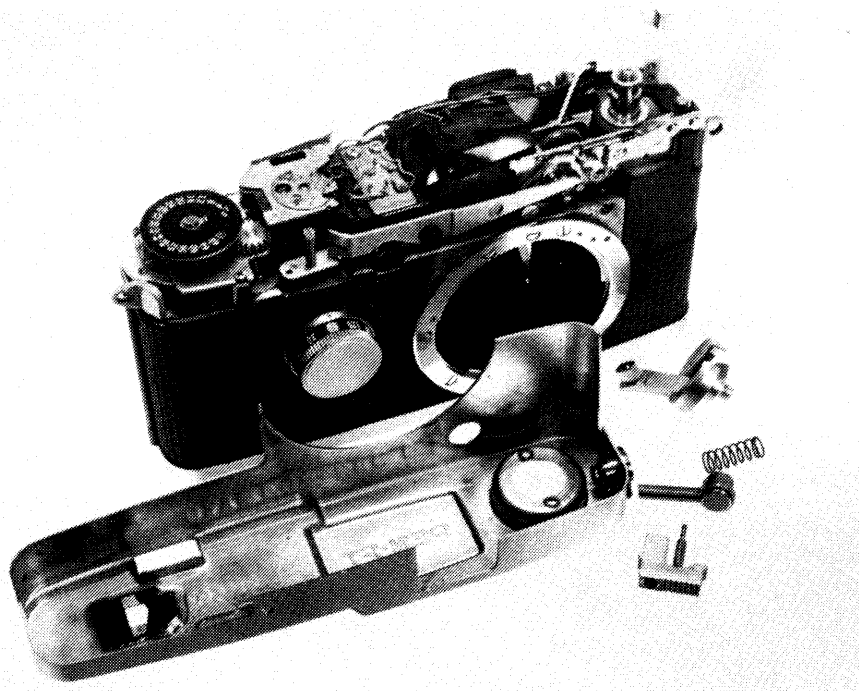
To remove the backdoor in order to work more easily on the eyecup adapter detailed in Part III, you must first remove the baseplate. Then take a very fine jeweler's screwdriver or a straightened paperclip and slowly push down from the top of the backdoor joint against the hinge shaft; it is centered within the hinge and very easy to find. After you have an inch or more free from the bottom of the hinge you can gently pull it out, and the backdoor hinge will pull apart, freeing the backdoor.

Replacing everything is a simple reversal process. Reinsert the hinge shaft of the backdoor if you have removed it, using gentle pressure all the way. Put the rewind button back where it belongs under the retaining clip. Fit the baseplate over the body casting and replace the two screws. That's all there is to it.

Removing the Top Cover Plate of the Pen SLR Cameras

If you have decided that installation of an accessory shoe makes sense, you may want to do the job yourself. Or, if your camera has been exposed to a lot of dust, you may decide that it needs cleaning.

As was mentioned in Part I, the primary dust entrance is around the winding lever of the camera. There is also a spot in front, above the shutter dial, where there is very little overlap between the body casting and the top cover plate; a surprising amount of grit can build up there. If you can avoid having it settle in and spread around, your camera is likely to stay in shape longer, and its finder may not become as spotted as it otherwise would.



Pen FT with top removed. Let your repairman do this. The long arm across the prism area runs from the delayed action, at right near the rewind shaft, to the shutter release. The exposure meter assembly sits above the central mirror, left of the prism housing. The small parts in front, from top, are the rewind knob assembly, back locking spring, delayed action lever and release assembly, and shutter release. The loose wire above the rewind shaft attaches to the flash outlet at the right end of the top cover plate.

Both areas can be reached simply by removing the top cover plate of the Pen SLRs, and doing so is also necessary if you want to install the shoe. It is not a difficult job, but there are one or two tricky aspects to it. Let's first examine a Pen F or the Scientific Model, because these two are simpler than the others.

Unless someone before you has replaced them, all the fastening screws on the Pen F are slotted; on the other three models they are cross-head screws of the Phillips type. The normal small screwdriver assortments carried by many camera stores have drivers that will work on either type; get such a set before you begin work.

Under the end of the wind lever, at the back of the top cover plate, you will find a single screw. Undo it carefully, make sure it does not fall into the wind lever slot. It is easiest if you wind the camera before you begin; the lever has to be moved part way out anyway in order for you to reach the screw. Save the screw carefully after you have it out.

There are two more screws in the well under the rewind knob. Open the back of your camera, put the shaft of a small screwdriver in the slot of the rewind fork under the knob in order to brace it, and screw the knob loose from the shaft that ends in the fork. It unscrews easily by turning counterclockwise. Do not unscrew the little screw in the knob under the folded rewind arm; this only frees the arm from the assembly.

If you can, leave the rewind shaft in place rather than removing it. Also leave the backdoor ajar. If you remove the shaft and close the backdoor, you may later have to do a lot of fussing in order to get back in there.

Now undo the two screws in the bottom of the rewind knob well. Tip them out of the well and save them together with the one you have already removed from under the wind lever, noting which ones came from which place. Usually the first is slightly differently shaped, with a flatter top, although any will fit into any spot if you mix them up.

At this point the top cover of the Pen F or the Scientific Model is ready to be removed. Before you take it off, however, you should know that there are two parts underneath that will fall loose, and a third that must be detached before the top cover can be wholly freed from the body. The two loose parts are the shutter release tab and a spring which works the back cover lock. Remember not to lose track of them as you remove the cover plate.

The third item to be wary of is the small wire that connects the synch outlet on the cover to the camera mechanism. There is only an inch or so of extra wire. Therefore you must work the cover plate loose from the body casting very gently rather than pulling them apart ruthlessly.

As soon as you have worked the cover plate free, look inside at the inner projection of the synch outlet. You will see that the connecting wire ends in a fork connection that is held in place by an unusual screw with two crossed slots, making four half-length slots in all. You must reach in here with a small standard screwdriver, engage its end into the easiest one of the four to connect with, and turn this screw about a half-revolution counterclockwise. It does not need to be unscrewed farther; you have now opened it enough so that the fork at the end of the wire can be freed from the screw's shaft.

As soon as you have freed the wire, the back and camera body can be treated as two distinct parts. Make sure not to lose the spring and the shutter release tab; look at their proper locations, then save them with the three screws and the wind knob that you have already removed.

With the Pen FT and FV you face the further complication of detaching the delayed action lever and release button before you can take off the top cover plate. The first step in doing so is to unscrew the release button counterclockwise until it comes loose. In order to do so, I generally use a small wide-tipped pair of jewelers' pliers with a piece of tape at the end of either jaw in order to start the button loose from its fully inserted position, since it is not slotted. I then do the rest of the unscrewing by hand.

With the button off, you can look into the well where its shaft fitted. At the bottom of the well is a small slotted screw. This is counter-threaded; it unscrews by turning **clockwise**. Unscrew it. The delayed action shaft assembly will now be loose and can be taken out of its hole in the top cover plate. As soon as you have removed it, screw the release button partway back into its well **without** removing the counterthreaded screw from the well's bottom. This way you will have all the pieces together in their proper relationship and ready for storage while you work on.

From this point top cover removal from the FT and FV is identical to the earlier process. Once the top is off, you can remove dust from the inner works that you have exposed with a miniature vacuum, a blower used in its inhale mode, or a Q-tip. Built-up grime may need to be loosened with a dab of lighter fluid or even acetone on the end of a Q-tip before you can get it off, but for goodness sake do not flood the works with either fluid! A small brush with firmly attached bristles may also be useful. You won't have to go looking for the dirt; it will be right there unless your camera has spent its life in a hermetically sealed box.

Do not attempt lubrication without further advice from a specialist. Very little is needed under any circumstances, and in this area you will probably just make it easier for the next batch of dust to gum up the works of your precious little Pen. Make sure that the Q-tips have left no lint, nor the brush a bristle, when you have finished.

If you have an FT with a dead exposure meter, or are going to make the modification discussed in the text which replaced the semi-silvered FT mirror with a fully silvered one, you might as well also cover the meter whose heads are under the top cover plate, threading three holes in the shoe to receive the bolts, whose tops must finally be cut or filed flush with the top inner face of the shoe. I then cover the inner bolt heads with a small piece of thick electrical tape to keep them positively away from the top prism of the finder once the camera has been reassembled.

If you have an FT with a dead exposure meter, or are going to make the modification discussed in the text which replaces the semi-silvered FT mirror with a fully silvered one, you might as well also cover the meter illuminating window on the inside with another piece of the same tape while you have the top off.

The same is true if you decide not to replace the delayed action arm of an FT or FV. Cover the inner part of its hole with tape. Here I usually use a wide piece of marking tape rather than electrical, but either will do fine. You can also take care of whatever cosmetic adjustment you want to make to the outer area of the hole while the cover plate is still off of the body. I use a silver coding dot stuck onto the exposed area of the marking tape.

Putting the top back on is the reverse of the removal procedure. The shutter release tab has a long very thin shaft that goes through a small hole in the plate below it; the screw-end shaft that sticks up from the mechanism fits into the bottom of the tab's cable release socket. The compression spring fits over a raised hub beyond the rewind shaft and must be pointed straight up. The fork of the synch wire fits under the double-slotted screw, which must be tightened fully down after the two have been mated and before you proceed with reassembly. Things work best if the wire is facing rearward and slightly down when you tighten them together.

There is not much play between the top and the body casting; fit them together carefully. The parts of the top that surround the lens flange fit into slight slots between the flange and the body. When you have the mating process well begun, look down into the hole in the rewind well and be sure that the synchronizing wire is clear of the raised area against which the two screws will secure the well. If it is going to be mashed where it is, nudge it farther backward with a tiny screwdriver so that it will be out of the way when the top is fully mated.

You will also have to nudge the shutter release tab into its proper place as you mate the top and the body. Again, you can do this with a small screwdriver.

Once the cover plate has been eased fully home, reattach the three retaining screws. Don't let the one that goes behind the wind lever fall into the lever's slot. Then replace the rewind knob, again using the shaft of a small screwdriver between the ends of the rewind fork in order to give you a solid base against which to screw it home.

If you are replacing the delayed action lever, align the cam on the back of the lever assembly with the small tab inside the hole in the top cover, then place the lever assembly in the hole. This will usually take care of itself automatically if you align the lever in its normal rest position.

Remember to insert the small inner screw by turning it **counterclockwise**, against normal expectation, and tighten it down firmly. Then screw in the release button by hand, finally tightening it with care so as not to mar its chrome finish. This, by the way, is usually the most scarred-up item on a used Pen FT or FV, if you examine it closely.

If you have had to use excessive pressure anywhere during reassembly, you have made a mistake. Otherwise, the camera should now work easily. Try it and see. If it does not, reopen it, find your mistake, and fix it.

Materials and Supplies Needed for Lens Adaptations and Other Fooling Around Projects

To start with, I keep nuts, bolts, and machine screws in a number of sizes. I also have a large stock of "parts," mostly from cameras and other equipment that wore out or were victims of one or another form of disaster or ill-advised experimentation, and of course the usual accumulation of detritus that gathers during the course of going on forty years of do-it-yourselfing.



Materials for Nikon plunger adapter: Nikon E or E2 Extension Ring, Pen F T-mount, and soft shutter release accessory. Try finding them at places like Brooklyn Camera Exchange or Columbus Camera Group.

In order to do any of the adaptations that we have discussed in this book, you will also need some specialized pieces of photographic equipment, just as I did. First, of course, will be some sort of tube with a Pen SLR male flange so that you can plug your lens adapter into the camera. The most readily available such tubes are either a T-adapter, of which many seem to remain, or an Olympus OM to Pen F lens adapter. The latter was introduced after the Pen SLR cameras were discontinued, and judging from the frequency with which the OM adapters are advertised in places like **Shutterbug** Olympus made many too many of them during their currency. The Olympus adapter will usually do better than will the T-adapter, except where I have specified to the contrary, and it has the further advantage of incorporating a mounting flange of more durable metal than that found on the usual aluminum T-adapters.

You will next need a fitting that has the body flange of the system from which you are adapting lenses to your Pen SLR. There are several possibilities: one is an extension tube for your present camera system, another is a reverse T-adapter (the sort of fixture needed to mount your camera's lens onto the front of a T-mount bellows unit, for example). There are also flanges that enable owners of various camera systems to mount their lenses onto enlargers; these too will often work. In some cases, such as the Nikon plunger adapter, a specific tube is necessary; in most cases, indeed, some form of extension tube will probably work best for your purposes. Since you will probably have to gut it, you might want to pick up an inexpensive non-automatic set of tubes for your system if you run across one.

Not all of us have all this sort of thing conveniently at hand, especially the out of date items. If you have friendly relations with a well-stocked camera store, you may be able to find some of the necessary tubes and attachments lying in an out of the way drawer or a hidden box of useless and apparently unsalable remnants. This is the least expensive way to get them, but requires a lot of footwork.

Perhaps you live near a large city with an outlet that specializes in bits and pieces which other shopkeepers have given up on. Joe Livengood's in Philadelphia, now long gone, was such a place. Joe kept so much attractive junk there that after a single exposure to such madness no one of my absurd persuasions could possibly have avoided becoming a photographic tinker, which is what an executive of a nobly named importing company whose reputation usually exceeds its capability to produce, much less its product to perform, recently called me during a well-attended session, thinking he had pronounced the ultimate curse upon my soul.

Today Brooklyn Camera Exchange seems to be another such treasure trove. It advertises extensively in **Shutterbug**, and if neither Marty nor Arnie can find what you need among their goodies, they may very well know where to go to acquire it. They deal by mail and telephone; if you are totally stymied, give them a try.

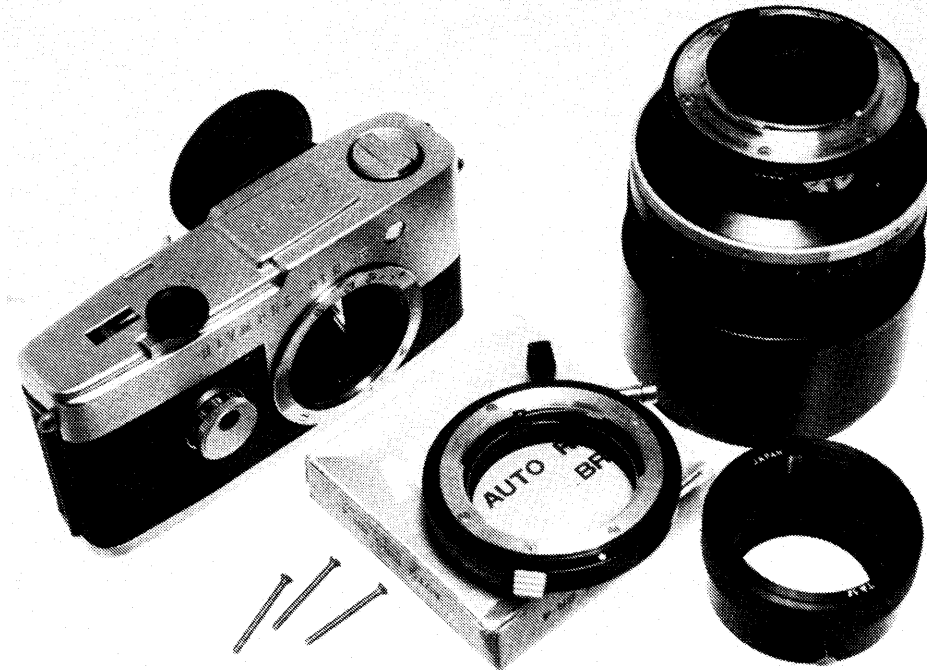
When it finally comes to putting together, some adapters can be made with epoxy bonds, but I prefer to use small bolts whenever there is room to do so. My usual size is 2-56, but I sometimes need 1-72. You can often pick up 2-56 bolts in places like Radio Shack or a well-stocked hardware store; 1-72 is most often a specialty item. You will also need the proper drill bit to make the holes for your small bolts, and none of the bits in a standard hardware store assortment is correct. I have found that a good source for all the necessary bolts, bits, and taps is Small Parts Inc., in Florida. You can order by phone once you have established an account, and their catalog alone is a source of permanent inspiration.

However you finally manage it, I suggest that you gather all the materials and supplies that you might conceivably need before you start your project. Having to wait while someone ships you a vital piece or a necessary tap is frustrating. And note that both miniature taps and miniature drills can and will break without warning or even apparent reason: lay in a decent supply of both.

All this work may seem nonsense to you; if it does, it probably is. But there are some of us who like to dither among promising projects: we seem to learn a lot that way. Obviously, a part of this book has been written with such compatible colleagues in mind. A tinker is nobody's fool.

APPENDIX E: ANOTHER NIKON LENS ADAPTER, STEP BY STEP

Not long ago I found another Nikon necessary gadget that makes a superb Nikon to Pen lever-operated lens adapter. With very slight additional modification, it can even be used with Nikon's autofocus lenses. Because lenses in Nikon mounts are readily available — many of you will already have them on hand — this adapter is especially useful. This Appendix will show you exactly how to make a lever-adapter in order to use Nikon lenses on your Olympus Pen SLR, with focusing at full aperture and a facility for quickly closing the lens to shooting aperture just before you make your exposures.



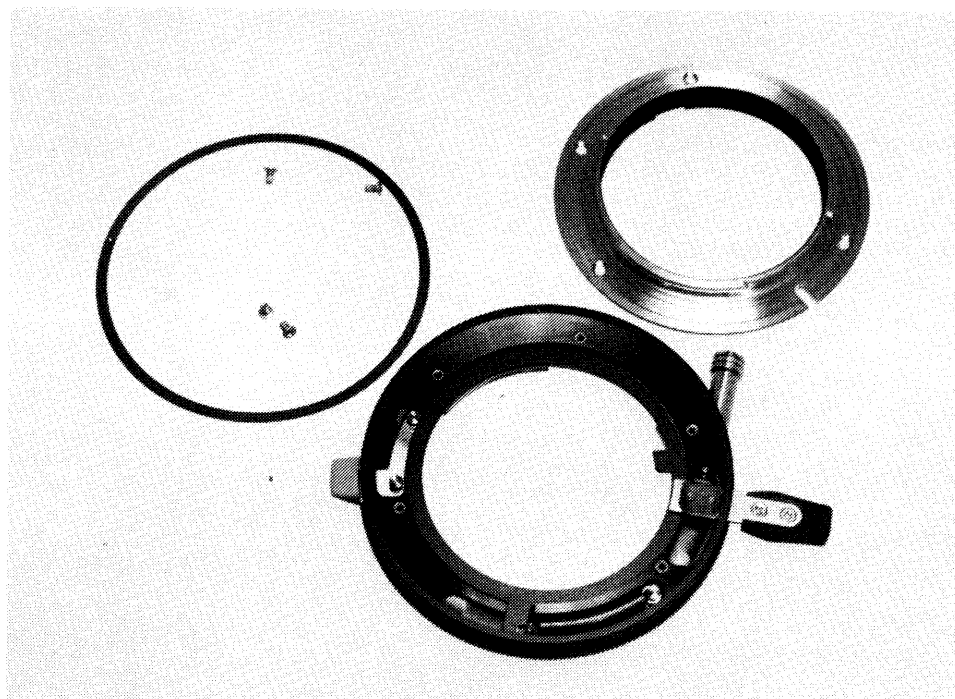
The objective: to join the modified Pen FT to the Nikon 135mm f/2 lens by using the items in the foreground: three 2-56 bolts, a Nikon BR-4 tube, and a Pen T-mount adapter.

The Nikon gadget that you will need is the BR-4 ring. This is still a current item, I believe; at any rate, it is recent. In standard form, it is a ring that is spring-loaded to hold a Nikon SLR lens at full aperture; a lever tipped with black plastic can be moved downward in order to close the lens to shooting aperture and then, if you want to do so, pushed inward in order to lock that aperture in place. The BR-4 is usually used on a lens that has been mounted in reversed position, but it can also double as a basic non-automatic 9mm extension tube. A second fitting on the ring allows you to mount a cable release to the BR-4 in order to close the lens down. You will also need an Olympus Pen T-mount adapter or a similar item.

Additional parts are three flat-head 2-56 bolts, shortened if necessary to about 3/8" long, and probably some thin shim material. The necessary minimum of tools are a hacksaw, an electric drill, properly sized (#50) drill bits and a tap for the 2-56 bolts, rough and fine metal files, calipers or an accurate substitute for this vital tool, and a good set of jeweler's screwdrivers that includes the #0 Phillips head one. The task will probably not take longer than a weekend afternoon to complete, though if you're like me you will probably "improve" it again later!

Start by disassembling the rear flange from the Nikon BR-4 ring; this is the fitting that holds the ring to the camera. It is secured by four Phillips screws which unscrew in the normal direction. They have been locked with cement; be careful not to damage their heads when you first loosen them. Save the four screws carefully. Inside the flange is a loose but vital metal shim ring which you should also be careful to preserve. Put the body of the BR-4 adapter aside carefully; you need do no more work on it unless you plan to adapt autofocus Nikon lenses to your Pen.

With your hacksaw, remove the male Nikon fitting from the back of the rear flange that you have taken off of the adapter. The fitting is the normal circular bayonet ring; it is seated on a slightly raised area at the center of the rear flange surface. First unscrew the little limiting Phillips screw in the channel under one flange, then saw the entire fitting off more or less flush with the raised surface area. After you have gotten rid of the bayonet fitting, a jagged part of the raised area will remain. Smooth it down with your files until it is only slightly higher than the main rear flange surface, and check the job with your calipers in order to establish that the thickness of the final work is entirely uniform throughout. This is the surface to which you will mate the modified T-adapter.



The BR-4 tube disassembled: top right, the flange that must be modified; bottom, the main tube body and other parts; top left, the spacer ring and four Phillips screw.

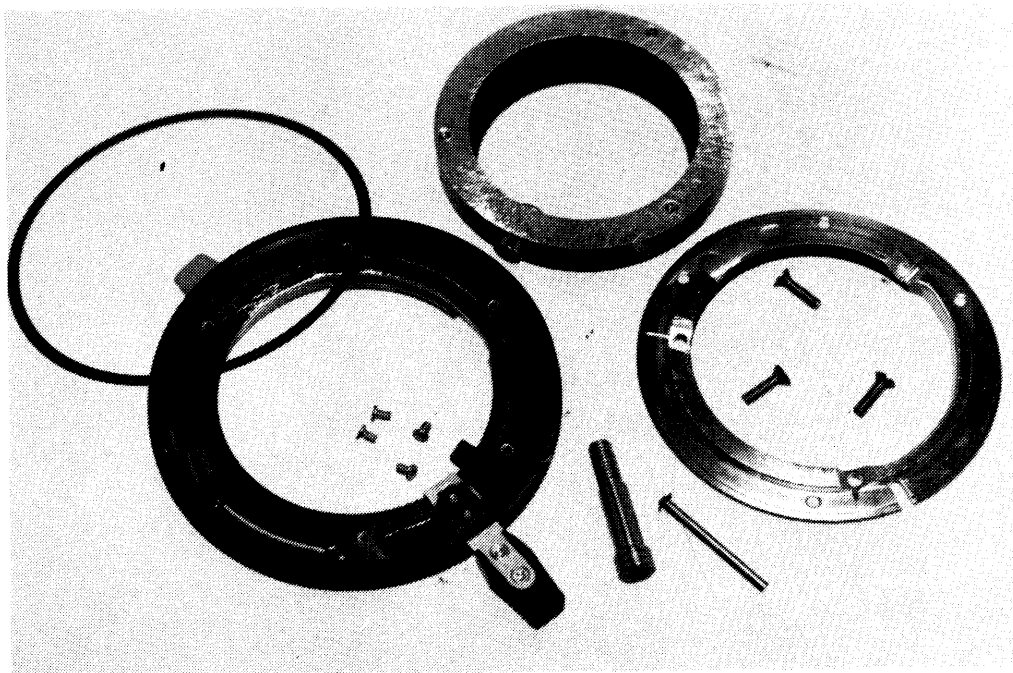


The modified parts: left, the Pen T-mount; right, the BR-4 flange with male Nikon bayonet removed. At this point about one millimeter of thickness remains to be cut away.

If you want to use autofocus Nikon lenses on your Pen F (in their manual mode only, of course!), you will now have to enlarge the flange's inner diameter somewhat in order to allow the electrical contacts on the lenses to clear the flange area. This can be done with a semi-circular file. Put the cut-down flange in place against the BR-4 ring, using one or two of the original screws, and note where the lens' electric contacts will foul the flange when in its mounting position. Notice especially that one contact is somewhat removed from the rest; make sure that you have located them all.

Mark the area where metal must be removed. Then do the same with the lens located against its locked-on position, and remove only enough metal to allow an arc of about 120 degrees where the electrical contacts need to move freely within the ring. It is important not to remove any excess on either side, because you will need most of the inner circumference in order to secure the modified ring to the Olympus lensmount fitting.

For autofocus lens use, you will also find it desirable to remove a slight amount of the inner circumference from a thin black ring located in the main part of the BR-4; the ring that is rotated when the outer black-tipped lever is depressed. Define the shallow area that must be relieved on this ring in the same way, by holding the lens loosely in place, and remove that area carefully with a fine semi-circular file. Do not allow the thin metal to bend or crease. A Dremel tool with a cutting bit helps here, if you have one; use it instead of the file. Smooth all the edges of both rings carefully when you have finished.



Ready for reassembly. At center bottom are the tube and stem that once formed the cable release socket on the BR-4 tube; they will be discarded. At right, the modified BR-4 flange and cut-down 2-56 bolts, and above it the tapped and drilled T-mount stub. The spacer ring and Phillips screws are with the main BR-4 body.

If you do not plan to use autofocus lenses in your finished adapter, you can skip the above steps, making today's job a lot simpler. If, later on, you decide to use one of these newer Nikon lenses, you can always disassemble your adapter and make the necessary modifications then.

Next you must modify the Pen T-mount. The ones usually available are locked with a small chrome button that sticks up slightly in front of the rear face of the mount. Cut the ring apart with your hacksaw no more than one millimeter in front of this button, being careful not to damage the part of the locking assembly on the inside of the mount. File the rough edges of your cut smooth to a depth where only a trace of metal remains in front of the button, again using the caliper in order to assure a uniform depth all round.

Now determine how you want your assembly to be oriented. I have chosen to fit my lenses to the camera with their f-stop/distance indices rotated about 45 to 50 degrees clockwise from the usual top center position; this arrangement puts the adapter's black-tipped lever in a convenient location to be operated with the middle finger of the right hand while making photographs: at an angle of about 45 degrees above the horizontal. It also leaves the lens' indices readable from above. Make certain, however, that your orientation will not mask the Olympus lens removal button behind the lever.

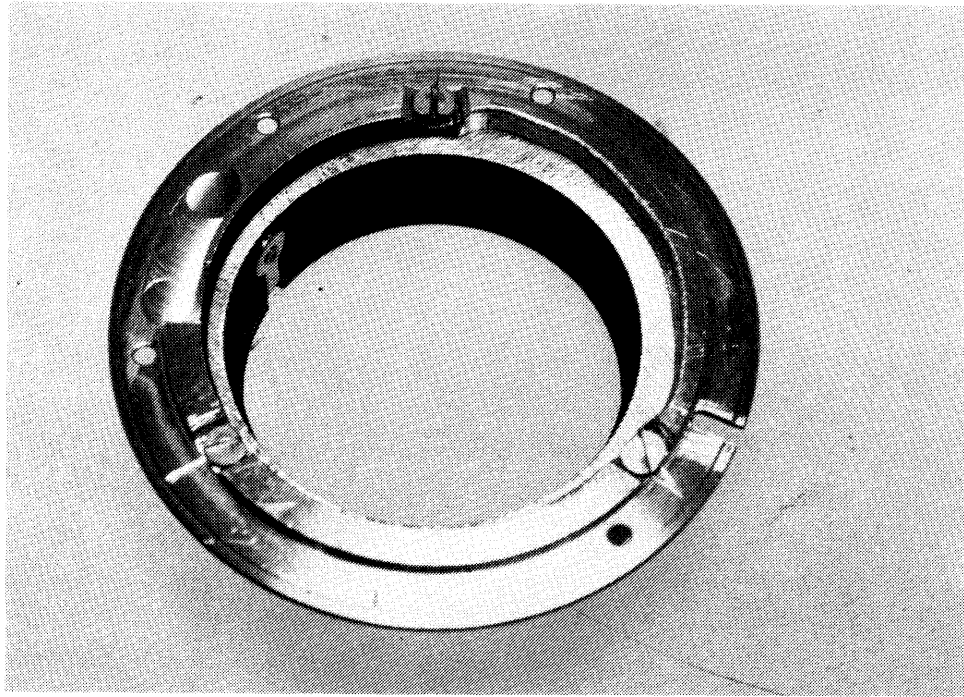
The easiest way to do the orienting is to attach the modified rear flange back to the BR-4 with the two opposing Phillips screws (you needn't yet use all four), and mount your longest Nikon lens that has a positive infinity stop to the front of the BR-4. Then place the shortened T-mount onto your Pen SLR body.

Go outdoors, choose an "infinite" object, and carefully place the lens on its modified BR-4 against the shortened T-mount. This will be easier if your long lens has a tripod socket: you can mount it on your tripod. Set the lens at its smallest aperture, consider where best to locate the black-tipped lever for easy operation, and try it out by pushing down on the lever, darkening the image in your finder. When you have the most comfortable relationship established, mark both the T-mount and the BR-4 rear flange in a way that records their relationship.

At the same time, see if you can achieve "infinity" focus when the two fittings are held tightly together. This procedure is the reason for using your longest lens. If you cannot focus all the way to "infinity," you will have to remove a little more metal from one fitting or the other. If you focus "beyond" infinity, the difference can easily be made up by shimming during final assembly.

Once you have the orientation and infinity focus questions answered, the only step that remains is to attach the BR-4 to the T-mount. On the inner surface of the flange that you removed, opposite the side you have filed down, you will see a raised lip around the inside circumference. If you removed some metal in order to allow use of autofocus lenses, about one-third of this circumference will be enlarged, reducing the width of the lip; if you did not, the lip is a uniform circle.

Drill three equidistant holes, centered between the edges of the raised lip, just large enough to allow insertion of a 2-56 bolt without threading. First, though, with the two adapters properly aligned make sure that none of the holes, when extended into the T-mount, will cut through the Olympus lens locking assembly below the chrome button. If you have removed some of the adapter flange lip's inner circumference to make it usable with autofocus lenses, put a hole in the thicker sector just beyond each end of the removed area, and the third between them on the larger unaltered lip arc.



BR-4 flange attached to T-mount stub. Notice that the heads of the three 2-56 bolts are countersunk into the flange lip, and that at its top right section the flange has been relieved to accept the electric contacts of a Nikon autofocus lens.

Now place the modified back of the flange and the T-mount together, orienting them by your earlier marks. Be careful to center each ring on the other. Using your #50 bit through the three holes you just made in the flange, mark the three places where the T-mount must be drilled and tapped in order to receive the attaching bolts. Remove the flange and drill and tap the holes for the bolts. You can extend the holes all the way through the T-mount in order to make this process easier; they will not come close enough to the OM body mounting tabs to foul them.

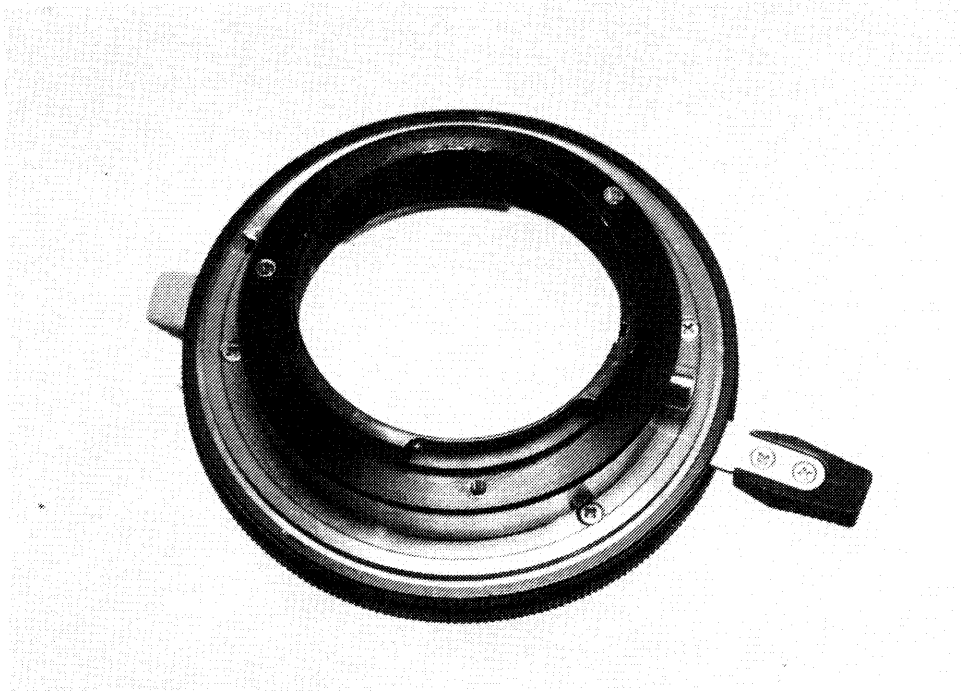
You must now cut down the raised area on the inner lip of the BR-4 flange sufficiently to allow the heads of the three bolts to be fully countersunk. Use the edge of a file for this, making wedge-shaped notches in the lip; if you try to countersink the holes with a larger drill bit, you are likely to damage the flange.

The tube on the BR-4 that accepts a cable release will stick upwardly askew when your adapter is mounted to your Pen SLR. If you do not plan to use a cable release in this location, the tube can be unscrewed in the normal direction (it is held by cement, so that starting it will be difficult), and the resulting hole filled with plastic. The activating pin within the tube should be removed carefully from the inside of the BR-4 after the tube is out but before the BR-4 is assembled to the mounting flange; it is retained from the inside by a tiny split ring that is very awkward to work with, especially if the adapter has been fully assembled.

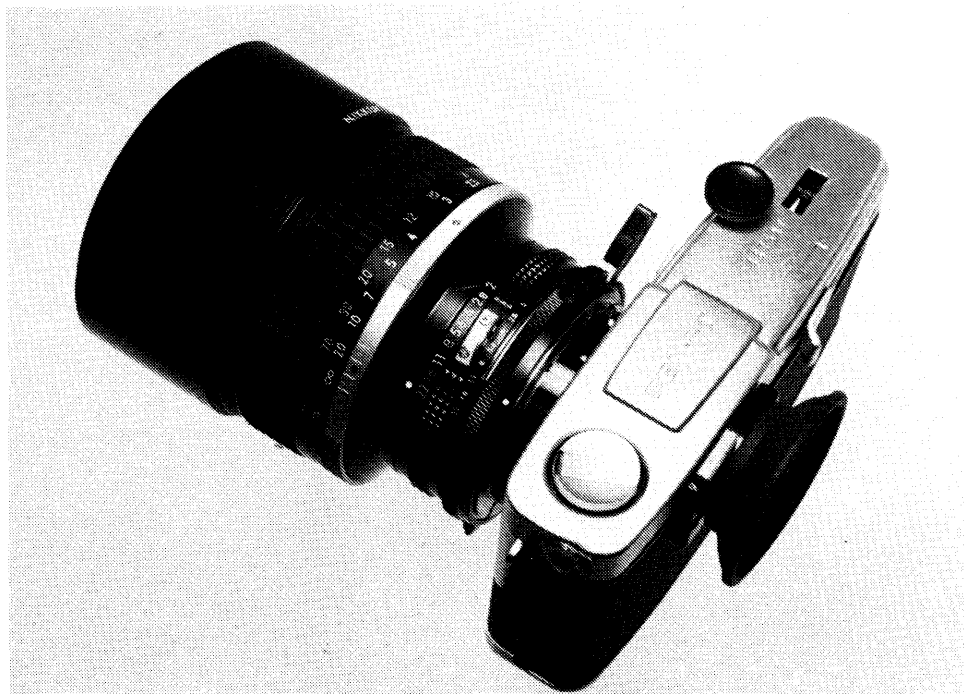
Before final assembly, make sure you have removed all traces of metal dust and scraps left from the sawing and filing processes from each part of the final adapter. After this has been carefully done, it is a good idea to put a bead of viscous black paint on one of the mating surfaces in order to assure a light-tight connection. Before the paint can dry, attach the BR-4 flange to the T-mount with your three 2-56 bolts. File away any parts of the metal bolt heads that protrude beyond either edge of the raised flange lip, as well as any length of the bolts that may extend through the T-mount into the camera mounting area. Again, be sure afterward that all residual metal particles have been thoroughly cleaned out.

You will find that the four Phillips screws which attach the flange to the body of the BR-4 adapter can just be fitted back around the outside edge of most shortened proprietary T-adapters. (If you have clearance problems, you will have to file four grooves in the outer circumference of the adapter in order to give yourself

room to work.) Assemble the BR-4 body to your rebuilt rear flange with these four original screws, first being sure to replace the narrow BR-4 spacer ring where you found it after disassembly.



Rear view of the completed adapter; the Phillips screws just clear the outer circumference of the cut-down Olympus Pen T-mount.



Our objective accomplished: the Nikkor lens on the Pen FT body. The stop-down lever extends above our new adapter.

The adapter is now essentially complete. If it needs shimming because your lenses focus “beyond” infinity, however, this can be done between the modified T-mount and the BR-4 flange, or you can remove the front female lens flange and insert shim material between it and the body of the adapter. I found the first location easier to work with. Use one or more layers of whatever thin material you can find to do the job: brass shim stock is traditional, but paper, tape, and thin plastic are easier to cut to shape. Add a little more paint in the joint when you reseal the job, and also darken the internal areas that have lost their black finish by being filed or drilled.

This is all there is to it. To work with the adapter, place your lens on the front and your camera on the rear. The lens will be wide open for accurate focusing and composition; to close it to the exposing aperture, simply push down on the lever just before releasing the shutter, and allow it to spring back up again once the shutter has closed. If you want to lock the lens at the exposure aperture, just push the lever down and then inward: it will lock into place. This procedure is exactly opposite to that used with the Canon and Contax lever-adapters that I described earlier, but it works just as well.

This has been a more detailed explanation of adapter-making than was given earlier in the text; and in reading through it you may have developed a firmer grasp on some of the principles that are involved in making any similar sort of accessory for yourself, whether for use on Olympus Pens, Nikon lenses, or whatever. Good luck!

APPENDIX F

Names and Addresses: Information, Assistance, Sources, and Supplies

Further details about the following companies, listed in alphabetical order, can be found in the appropriate sections of the text.

Brooklyn Camera Exchange	549 East 26th Street Brooklyn, NY 11210
Columbus Camera Group	55 East Blake Columbus, OH 43202
Olympus Camera Corporation	Crossways Park Woodbury, NY 11797
Ken Ruth and Terry Terhaar Photography on Bald Mountain	P. O. Box 113 Davenport, CA 95017
Porter's Camera Store	P. O. Box 628 Cedar Falls, IA 50613
Shutterbug	P. O. Box F Titusville, FL 32780
Small Parts, Inc.	P. O. Box 381736 Miami, FL 33138
Spiratone, Inc.	135-06 Northern Boulevard Flushing, NY 11354

In addition to those listed above, I would like to express appreciation to the following people and organization for information, advice, encouragement, and assistance.

John Baird
Dennis Couzin
J. L. Korten
Robert H. Martin
Michael A. Martinez
Eddie Tillis
Derek Ward
XYZ Machining, Santa Fe, NM 87501

For interested enthusiasts, a group of folk interested in single-frame photography with all sorts of cameras, including the Pen SLRs, has existed in England for the last several years. Should you want to think about becoming a member, further information is available from:

Fred Adcock
"The Half Frame Group"
6. Cerne Road, Morden, Surrey
SM4 6QQ England

2007 ENDNOTE:

Obviously, the addresses and businesses on the final page of the original book have certainly undergone major changes! But I still appreciate the help I received back then from all the various individuals named, as well as the businesses. I know that Ken Ruth is still working, and he's likely to tell you that my approach to things like modification is "Ruthless", but in fact he did help me with some of the Pen F modifications in the beginning, so that my approach may be at least a little "Ruthful". Whenever I get a classic camera that needs work, Ken is the man to whom I send it.

As stated in my new little Introduction, I realize that this monograph has less than the usual value for someone whose hobby is collecting cameras, since by now you have certainly noticed how user-oriented it is (just as I promised). It was, is, and always will be directed at the good soul who wants to have fun making photographs with his Pen F SLR. Nowadays, though, that good soul would probably be better off finding a Pen F model which shows signs of use; a really clean one is too valuable to fool with in 2007. If you can find one in used but not abused condition, however, you may be able to regress two decades and, I hope, share our enthusiasm.

One thing that has really amused me is the fact that Olympus has returned to the Pen F viewfinder layout (but right of the lens as you look from the front, rather than the Pen F's left-side assembly) for some of its recent "Evolts" (dreadful name, compared with "Pen F"!) digital cameras. For instance, the E-330. I happen to like the Four Thirds digital system: I've been using it ever since the Olympus E-1 came out. I no longer have any need to make two-foot by three-foot prints, and am thus not fazed by the fact that the Evolt sensors are much smaller than a 35mm film frame. After all, wasn't that just as true for the imaging area of our Pen F cameras?

Even the Leica Digilux 3 uses the Pen F mirror system — and why not, since it is pretty closely based on the E-330? Leica aficionados have been known to complain about the smaller sensor, but most of them wouldn't know just what to do with a big one anyway. Prestige gets shoved above everyday practicality! Remember the TLR Contaflex?

And, if you do happen to join me in using the Four Thirds system, here's a final tip on one of the written-to-death topics of this book. If you want to adapt strange lenses to your Evolt, or whatever, Olympus makes an adapter to use the OM-series lenses on the Evolts. The next thing you want to get is a couple of OM-fit T-mount adapters; they're still available. From there on, you can go anywhere: I know, because I have!

Good Luck, and thanks for your patience,

Peter