

ROUGH CUT

by Robert Rouveroy C.S.C.

Most of the film exposed here in Canada by professional cameramen ends up on TV. A small contingent is relatively busy shooting 35mm for theatre use. When commercials are made, most of them end up in 16mm format. We are singularly blessed with excellent equipment, fine lenses, great filmstock, dynamite labs and so forth. As a result, one might take for granted that to shoot film is a snap, really just an exercise in pointing the camera in the right direction, reading a Spectra and pressing the button. And, it is true, often these efforts are sufficient to record a happening and they might result, with clever cutting, in a product that simply cries out for theatre release by blowing it up to 35mm. The trouble starts right there. Shots that seemed dead sharp on TV end up fuzzy in 35mm and gnashing of teeth is heard in the land. For it is still not accepted that exposing 16mm correctly is much harder than shooting 35mm.

Leader

You see, most 16mm film is shot with a zoomlens. Under the best circumstances a zoomlens is a compromise. The designer, helped by a zillion dollar computer, labors to juggle chromatic and spherical aberrations, resolution, acuteness, astigmatism and a whole slew of other problem, mostly mechanical, to come up with an astonishing mishmash of rails, levers, springs, slides, etcetera, that purports to give us a thousand-in-one lens. And the zoom lens is truly a marvel. Someone once computed that without computers it would have taken 100 mathematicians 30 years to get the parameters right for the Angenieux 10-150mm.

That is without eating or sleeping of course. But still, never mind the most expensive zoomlens, it is not as good as a well designed prime lens.

When we are talking about a lens being "sharp", we're not really interested in what the manufacturer has to say about resolution or acuteness, or contrast or whatever. We like to sit down in the screeningroom and see that the image is simply dead sharp.

Toronto's "gimmick man", Robert Rouveroy C. S. C. is president of Robert Rouveroy Films Ltd. and shares ownership in Cinimage.

And so we observe a zoomlens, any zoomlens, and we find that while the image on the screen is sometimes quite sharp, upon widening to, say, 12mm, the image is just a hair soft. Not always, mind you. And we find the anomaly that going soft occurs at very small T stops. Now that's strange as we all *know* that lenses have a greater depth of field and focus if a small T-stop is used.

A Track

Now we see "sharp", because light enters the lens, passes the iris, imprints on the film and forms a dot, a circle if you will. Light is not coherent, like a laser beam, and tends to get reflected in the lensbarrel, refracted by the lens surfaces and diffracted by the iris edge. It "scatters" a bit and the resulting dot gets to look a bit fuzzy. Well, we can't do much about the first two culprits. The zoomlens barrel is long and there is a lot of glass to go through. We sometimes go "arty-farty" by shooting in the sun or in a light to get that multiple light burst so dearly beloved by CBC producers.

Who doesn't remember the time when no self-respecting CBC documentary was complete without sun-in-lens pullback from maple leaf to close-up of shrieking seagull. One could make one's name that way as a "great" cameraman. But let's get back to more mundane matters.

The one thing we can do something about is the iris. The smaller you make it, the greater the scattering of light at the edges, to a point that will simply look "soft" to the eye. Even so, for TV use it is ok, because the smallest TV "dot" is several thousand times greater than the projected film "dot" anyway. But when you blow it up to 35mm you're in trouble. And while a zoomlens looks softer anyway, even a prime lens has this trouble, often more pronounced because the difference between optimum "dot" and diffracted "dot" is so much greater. This is especially true of wide angle lenses.

B Track

The secret in getting the sharpest image lies in using the lens at its best aperture, that is, where the edge

of the iris does as little as possible to the light entering it. This seems to be about 2½ stops down from maximum aperture. So for a zoomlens with T 2.5 for instance, the best performance can be expected at T 6.3 to T 8. You'll give away a bit of depth but the image will appear much sharper, even at wide-angle positions. A prime lens, again especially a wide-angle lens, often T 1.8, will give a super sharp picture at T 4.5.

But now, how to get that aperture.

When shooting with 7252 the problem is not too important. With most exposures between T 5 and T 10 on a sunny day you'll be getting the best image possible. It gets dicey with 7254 however. You have to shoot two stops higher, (E. I. 16 to E. I. 64) and with 7242 (E.I. 80) or 7241 (E.I. 160) you'll be getting off the scale. With the exception of 7241, I'm talking about the use of 85 or 85B of course. So you owners of Eclair NPR might have the brilliant idea of course to make your variable shutter smaller. Better forget it. We're cheap-skates anyway. For a full day's pay, we deliver only half the action, as with a normal 180 degrees shutter the other half never gets delivered. To gain two stops you'd have to use a 45 degree shutter, that's only 1/8 of the stuff that is there. All jokes aside, it would give you an awfully jittery story.

Main Track

So you'll have to use neutral density filters. And with most cameras you'll have a choice of filters in front of the lens or in the back. Frankly, to put anything between the action and the filmplane is an abomination. The lens you'll have to live with of course. The neutral density filters, consisting of carbon black particles suspended in gelatin or glass, will affect the image somewhat, so it is quite important to get the best quality that you can afford. Don't ever use gel in front of the lens if you can help it. Due to the area to be covered the gel seldom stays flat and the image will be affected by refraction of light on the surfaces of the gel.

And that after the lens manufacturer has done his darndest to coat the lens-front to prevent that problem.

But even the best glass filters (\$30 and up) will degrade the image some-

what, because it is very difficult to clean the surfaces properly without scratching. Any mark, however faint, will take something away. But then, a filter protects the lensfront to a remarkable degree and it is cheaper to replace the filter than the lens.

So we settle for a gel behind the lens as the best solution? Not on your nellie if you know what's good for you. If you use prime lenses exclusively, no problem, but a zoomlens will get you into a lot of grief. Because the back focal distance of a zoomlens, especially with the Canon lens, is so critical, especially at the WA setting, it will tolerate around 0.0015mm. A gel filter, usually around 0.01mm thick, will affect the focus somewhat, because the light will be refracted by the surfaces of the gel. There is a complicated formula for this I'm sure but it is approximately one third of the gel thickness, or about 0.003mm. You'll end up with a lovely soft picture at the WA setting. So if you insist on using a gel behind the lens you'd do well to have the lens seating or gate shimmed by a very competent repairman, and henceforth you'll be sure to have a clear gel in place if you don't use a filter. You see, if you don't you'll again be lovely out of focus. It's a bummer that way, so I stick with optical glass filters in front of the lens. And to give me an extra edge I use a 85BPOL, because I find that the polariser will make the light at least coherent in one plane. It gives an extra "sharpness" I don't find with the 85BND filters. But be careful now. The 85BPOL is a 2½ stop difference with the sun at a 90 degree angle to the filmplane and the polarising effect deployed. But it will differ up to a half stop at other angles and of course the sky will look different too. It is a tricky filter to use well, but if you persevere you'll be surprised at the image improvement you'll get. But even with all the care and caution expended, and under the best circumstances, a zoomlens will simply not give you the best image possible on 16mm. If a blow-up to 35mm is desired, it is wise to use prime lenses only, matched if possible. Come to think of it, just imagine the weight of any zoomlens hanging on the few Cmount threads of a Beaulieu or ACL. And before the Eclair people come thundering down my neck to claim that on the ACL the lens is flanged, let me remind you that the lens is still a Cmount lens, screwed into a quick release plate, nothing more. The Cmount, quite adequate for

a light-weight prime lens is an abomination wedded to a zoomlens.

So, if you are invited to shoot a mini feature in 16mm for 35mm release, be very sure to select a good camera and have the prime lenses collimated with the filters in place by a very competent maintenance man. And shoot plenty of tests. Remember, your margin of failure is considerably greater than the lucky DOP on a 35mm Panaflex.

Letters

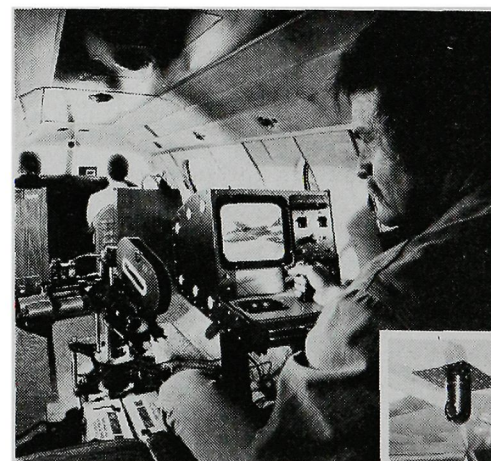
A most pleasant missive arrived for me a while back, signed Christopher Fryman in Tokyo. He inquires about a 4lb Nakamichi recorder I wrote about a few issues back. Sorry Chris, you misread me. I was postulating a bit on future developments and chose the name Nakamichi because I own a considerably larger recorder made by these gentlemen and I'm very impressed by its performance. I think the claim is 30-18,000 Hz, essentially flat and I believe it. I can't hear the difference anymore if it is a \$5000 Nagra or this thing. Of course there must be, but for all practical purposes, film for instance, it is undetectable. It is the same story all over again with sound equipment as with cameras. Any super 8mm is vastly more sophisticated than the professional motion picture equipment we have to work with. If the Nakamichi people can get those results out of a stereo cassette track (that is a total of four tracks on that tiny cassette tape) what would not be possible on a full track machine (the whole track going one way), double the speed and FM pilotone Xtal. A half hour cassette would give you 15 minutes of sound, just right to go with a 400 foot film magazine. I think that 4 pounds is rather conservative; they could do it in a pound package, easy. But the market is so small, it might cost \$10,000. Such are our burdens. We are literally 15 years behind on the consumers' market...

And from Harris Kirshenbaum, once technical editor of this here magazine, a very good tip about the hassle in getting into an Arab country after visiting Israel. He writes: "...when you go into Israel, ask the man very nicely to put your entry visa stamp on a piece of paper you've previously tucked into your passport. He will oblige gladly. When you leave, show it again and have the exit stamp

put next to it. Then eat the paper before landing in Cairo, Beirut, or Casablanca..." In a piece of falavel, maybe?

Before you take that advice dear readers, let me tell you about my good friend M, who did just that. He kept his passport in his back pocket to have it handy (for he was in Israel just in one of those sticky times and with a CP16 on his neck he was always asked to prove his identity), so he could whip it out quickly. They're quite trigger happy in those parts. So then he went to Greece or someplace, as he had to turn around for Cairo, and he dutifully disposed of his visa. Can you imagine his horror when he noticed the man in Cairo closely scrutinizing his passport which had a beautiful reversed print of the visa stamp on a blank page. A combination of perspiration and a short rainburst on the Syrian border had transferred the green ink of the visa on to the passport page. Luckily for him, the man was not too bright and could not make out what the visa said. M was able to get through all right and did his assignment. He managed to smear the stamp a bit more and got back safely to Canada, but I swear he changed from a happy-go-lucky guy to a gross anal retentive. But thanks anyway, Harris. □

(Equipment news continued from p. 13)



and tilt up or down 46 deg. With the addition of a TV camera taking only 15% of the light from the relay lens, the system can be operated by the cameraman with a joystick while watching a television monitor. Astrovision also has an office in London, England, at 54 Curzon St. □

WE'RE LOOKING FOR THE ONE SOUND MAN IN TEN WHO IS STILL ACCEPTING LESS THAN NAGRA PERFECTION

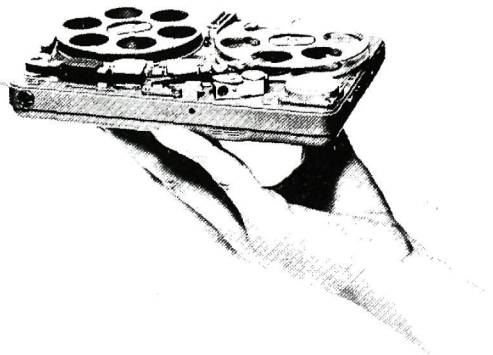
Nine out of ten professional sound men throughout the world have accepted Nagra as the standard of excellence for recording original sound tracks in the motion picture and broadcast industries. There's a sync Nagra for your every need.

Nagra 4.2, the most versatile portable recorder ever developed. Many internal plug-in modular accessories may be installed as required to suit numerous applications.

Nagra IV-S, a professional two-track, portable 1/4" tape recorder. You're able to record two separate dialogue tracks on location and mix later. And you also have a stereo recording facility when required. If you're not recording in stereo yet, think about it, you're going to need it later.

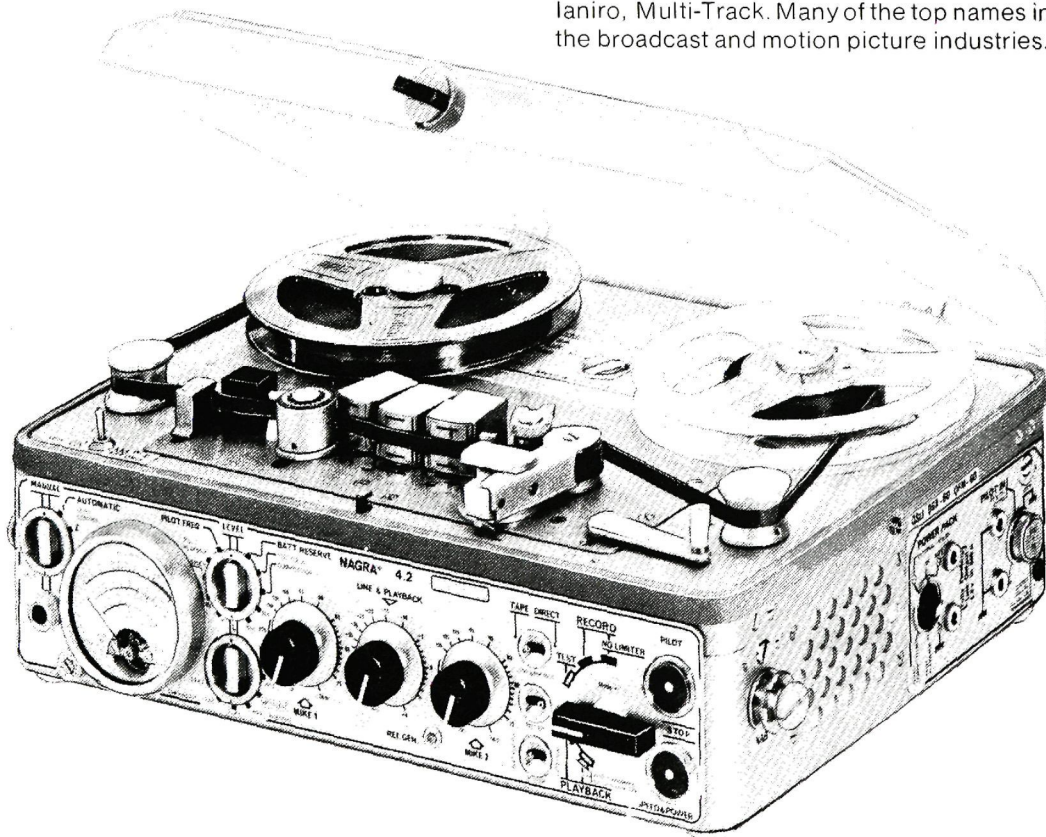
Nagra IS-LT, a professional compact tape recorder with Neopilot system for crystal or cabled sync with camera. Weighs only 10 pounds. Dimensions: L. 10 3/4" (275mm). W. 8" (200mm). H. 3 1/8" (80mm).

Nagra SN, the first miniature tape recorder to deliver professional quality recordings.



This 17 oz. pocket-size instrument may be used for synchronous motion picture production instead of a radio microphone. You get interference-free wireless recording.

Braun PLC Plan makes your move to Nagra very easy. It's a purchase/lease credit plan with low industrial interest rates and complete flexibility to arrange a payment schedule to suit your situation. Also, if you are "thinking system", remember other products we carry may be included — Arriflex, Ianiro, Multi-Track. Many of the top names in the broadcast and motion picture industries.



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