

pressure desired. With this arrangement, the blades can follow the position of the film, in case of misalignment, over a 0.40- to 0.80-in range.

Other fiberglass-epoxy spring materials have been purchased and are being evaluated for this application. Norplex and Westinghouse Glass Cloth Epoxy materials appear to have good resistance to the urethane molding temperature cycle (310°F for 3 hours). The resiliency is not as good as that of the Scotchply material but it is sufficient. This material, unlike the 0.010-in-thick Scotchply, can be purchased in a cured state, cut to size for molding. These materials are being evaluated for chemical resistance.

The spring-loaded wiper-blade squeegee unit allows easy passage of splices past the squeegee blades because of the compliance of the springs. Tension spikes caused by splices passing through the squeegee unit appear of lower magnitude with this design than with rigidly mounted blades.

Tests have been performed to evaluate this squeegee design for use on paper

processors. Uniform squeegeeing action was obtained on the papers as wide as 20 in.

A tracking problem was encountered in applying a spring-loaded wiper-blade squeegee unit to a paper processor employing a crowned roller system. The squeegee drag introduced in this case appeared sufficient to interfere with the tracking mechanism of the crowned-roller guiding system of this machine. Additional tests are being conducted on this machine to determine if squeegee inserts designed to function at lower blade pressures will avoid the tracking problem and allow the use of squeegees on machines employing a crowned-roller paper-guiding system. No problems are anticipated for conventional paper processors, many of which use fixed squeegee blades with no complications.

#### Conclusion

The spring-loaded opposed-blade squeegee is considerably simpler to adjust and maintain for efficient wiping action, particularly at low squeegee-

blade pressure, than is the fixed-blade squeegee design. This enables reliable operation at relatively low blade pressures, which introduces less tension increase to the web and reduces the possibility of scratching delicate materials. The spring squeegee design employing a squeegee-blade configuration molded onto a thin epoxy leaf spring yields a unit that is inexpensive to manufacture and simple to maintain. This design appears well suited for film cross-over squeegee applications and for cross-over and final squeegees on many types of paper processing machines. The flexible nature of this blade design also has an advantage in squeegeeing wide webs because of its ability to conform to the web surface.

#### References

1. Leslie I. Edgcomb and John S. Zankowski, "Molded squeegee blades for photographic processing," *Jour. SMPTE*, 79: 123-126, Feb. 1970.
2. Edward H. Deane and Richard L. McNeary, "A wringer-sling squeegee for motion-picture film processing machines," *Jour. SMPTE*, 76: 797-800, Aug. 1967.

## Letters to the Editor

### Re: Technology/SMPTE/Society/Anamorphism and Astigmatism

Dear Sir:

I would like to make a few comments on SMPTE President Holm's contribution, "Technology's Role in Motion Pictures and Television," that leads off the July 1972 *Journal*.

In one way, it is not possible to disagree with him on the question of whether technology per se can bring back the lost motion-picture audience. By and large, the public no more cares about film technology than they care about the technology of anything else — they don't really know what makes their kitchen refrigerator work, either, but as long as it makes ice, they are satisfied. And by the same token, the function of a movie is to entertain, and the public could not care less how it accomplishes this.

Proof of this is the enthusiastic rejection of such "important advances" as stereophonic sound, just to take one example. What we forget is that in all art, there are conventions, and we accept them — a statue is white marble, and needs no rouge on the cheeks. People don't sing at each other as they do in opera, but opera goers could not care less. By the same token, if monophonic sound with an upper frequency limit of 8000 Hz is adequate for dramatic purposes, then "improving" it to 15,000 Hz and adding channels is merely overengineering.

In the panic which arrived with the advent of commercial TV, the industry threw overboard the results of years of standardization, and adopted various and sundry "wide screen" ideas, merely to have something that TV couldn't do. The result is that all the best efforts of cinematographers to compose a scene in one format go down the drain when it is projected in another format. We should never have been guilty of condoning such an abomination, and it is possible that amends could be made, at this late date, by establishing a strong movement to return to 1:1.33. If this sounds reactionary, I suggest you watch the audience reaction to a picture screened in this format; how enthusiastic they always are at the brightness, sharpness and freedom from grain.

I have referred here to wide screens which are attained merely by cropping and magnifying the image. We should be shamefaced at having ever put our imprimatur on anamorphic projection, which inflicts on the audience a solid evening of astigmatism caused by projection through cylindrical optics; there is evidence that the reason that many people have ceased to go to the movies since the coming of CinemaScope is simply that "it hurts their eyes."

Mr. Holm suggests that all the industry has to do is make blockbuster pictures like *Gone With the Wind*, *Sound of Music*, *Fiddler on the Roof*, and the audiences will come flocking back. Well, maybe they will — for half a dozen such pictures a year. And even that is not guaranteed — it is somewhat akin to reminding the engineers who made the hugely successful Mustang that they also once made a car called Edsel. Need I point to such flop d'estime as *Cleopatra* for evidence?

Mr. Holm points out correctly that an industry must be able to sell its product for more than it cost to remain viable. Here is the nub of the question. There are, of course, two possibilities, and the one he does not mention is simply that, if the product now being made cannot be sold at a price higher than it cost, than perhaps the solution is to make it at a lower cost so it can be sold for less.

People may be sitting there just dying to go to the movies, as Mr. Holm says. But, I had occasion only a few weeks ago to talk to a cab driver in New York and mentioned *The Godfather*. His comment was "Gee, I'd love to see it, but I got a wife and 3 kids, and they are asking four bucks a ticket — that's twenty bucks for the five of us. I can't afford twenty bucks just to go to the movies."

So they watch TV because it is free... or they think it is free.

## ADDENDUM

### Addendum on Anamorphic Projection

Now, this is where the technology comes in. It is true, for a while, that the high cost of picture making was due to the unconscionable demands of the few "box-office" stars. But Shirley MacLaine and William Holden are no longer enough to bring people into the theater. And the high cost of film making today is due to overengineering.

Wide screen, 65mm negative, a monster camera and dolly that takes a 6-man crew to operate — this runs costs up astronomically — not only direct costs but indirect costs, because this stuff slows down production and extends shooting schedules.

We tend to forget that in the heyday of movies, most features, aside from blockbusters, were shot in 15 days, with minimal crews, so you could go to the movies for 25 cents or 50 cents in the biggest houses, with a stage show thrown in.

I do not overlook the current inflation and doubt that the 25-cent movie seat will come back in the near future. But the difference between that and \$3 a ticket is more than can be blamed on inflation — I doubt that inflation has yet hit the 1200% level.

I have watched young folk come into Tucson here in a couple of Volkswagen buses, and shoot a feature in a couple of weeks with handheld cameras in riotous disregard of union regulations — they didn't hire a Teamster member to drive each minibus. As engineers and perfectionists, we might shudder at the final results, but there is something to be learned here.

We have been guilty of overengineering in every direction — in the July issue of the *Journal*, for instance, there is considerable discussion of a gadget which will play a super-8 home movie through one's TV set. The cost of such a gadget has to be nearly \$1000, and if it does anything that a good \$100 8mm projector cannot do better, I have not seen it mentioned. I suspect the public will manage to restrain its enthusiasm for such purchases.

But when this type of overengineering results in the simplest feature costing several millions of dollars to produce, then, we have been putting our efforts in the wrong direction.

I suggest that the reports of new technical advances in filmmaking to improve theater-going be looked at from a different point of view. We do not, really, need 4-channel sound, nor ultra-wide screens, nor multi-screen presentations, nor 3-D image projection, nor most of the other ideas which out-of-this-world inventors enjoy toying with. The public does not care about such things.

What the public wants is a good show, at a price it can afford. We already know how to make a good show; what our engineering efforts should be aimed at now is to be able to make an equally good show, for less money. This means less expensive equipment; a \$35,000 camers must necessarily rent for a higher price than a \$5,000 camera, and there is considerable doubt that anyone can see the difference on the screen. It means, also, that the equipment must be lighter and easier to operate, and require fewer persons in the crew. And the quicker a setup can be made and broken down, the more shots can be put in the can in a day — and this is where the bulk of the budget goes.

We can do without wide screens, stereophonic sound, and such garbage. We must learn to substitute VW buses for Cinemobiles. Our cameraman can learn again, that a reflector is just about as good as a "brute" arc, and needs no generator truck.

We've got to make a product the public can afford or we are out of business.

It's as simple as that.

July 29, 1972

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One of the major causes of eyestrain and discomfort in the viewing of theatrical films comes from anamorphic projection.

Superficially, one might jump to the conclusion that the taking and viewing processes are complementary, hence distortions introduced in one stage are cancelled in the next.

This is not the case. For mechanical reasons, the anamorphoser is placed in front of the objective lens, both in taking and in viewing. But, then, the anamorphoser is in the object space in taking, in the image space in viewing, and cancellation does not take place.

Consider the situation in taking. Since the anamorphoser is afocal, and is placed in front of the camera lens, the latter continues to have its normal depth of field and resolution characteristics. In effect, the camera has no way of knowing whether the scene before it has been optically compressed, or whether all the objects in view are tall and thin. In any case, image points are recorded as circles of confusion, and if there are any aberrations in the anamorphoser, these circles may be larger, but they are, in any case, still circles.

In projection, there is a different situation. Here, the film image, which has, remember, circles of confusion of normal size and shape, is imaged by the objective lens in the normal way. But then, the image is spread sideways by the anamorphoser to fill the wider screen, and the result is, all circles of confusion are likewise stretched. In the commonest system, all circles of confusion become ellipses with the horizontal axis twice as large as the vertical.

This is, by definition, astigmatism.

And optically, astigmatism is considered one of the worst faults of a lens, to be corrected at all cost, even that of admitting larger amounts of other aberrations. But in this case, it is even worse, because a normal lens containing some astigmatism will only produce elliptical image points at some distance from the axis, whereas in the case of anamorphic projection, *all* the image points are elliptical.

No doubt an anamorphic system could be devised in which cancellation could be attained. It is doubtful that it would be worth the effort. It would be interesting to run a test by showing two films in succession—one anamorphically on a 10 × 30 foot screen, the other normally with 1:1.33 ratio on a 10 × 15 foot screen. I think that the brighter, sharper, less grainy image on the latter would be so obviously superior that even the normally indifferent audience would register a preference for it.

Dear Sir:

I have found John S. Carroll's Letter to the Editor most interesting. However, some of his statements deserve additional comment.

I agree that there are conventions in all art, and that we accept a white marble statue with no rouge on the cheeks, etc. Nevertheless, it is questionable whether there has been enthusiastic rejection of stereophonic sound, at least by theater patrons. Theater owners say that stereophonic sound has definite box-office value. And the letters I receive criticizing theaters for not providing the stereo sound found in almost every home, would tend to indicate that wide-range stereo sound in theaters is both a dramatic and an economic box office plus.

Relative to Mr. Carroll's judgment that audiences prefer the 1:1.33 aspect ratio to any of the so-called wide-screen ratios, I must say that I know of no factual basis for such a judgement. I must agree with Mr. Carroll that bright, sharp pictures that are free from grain are highly desirable. I have frequently said in my own talks and writings that people seem to prefer small, sharp pictures that are free from grain, to large fuzzy ones that are not. But that judgment, even though it is based to a substantial degree upon objective tests, is also substantially subjective, and it has met with conflicting opinions.