



# Colburn Film Laboratory

Geo. W. Colburn Laboratory, Inc. • 164 North Wacker Drive • Chicago, Illinois 60606  
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Dear Customer,

This is a collector's item worth saving.

We are pleased to send you this First Day Cover (a special stamp, envelope, and cancellation mark) that commemorates the 50th Anniversary of talking pictures.

Today, movies with sound are an everyday-fact-of-life. Talking pictures were not possible until 1927, when the recorded voice and the projected image finally could be synchronized.

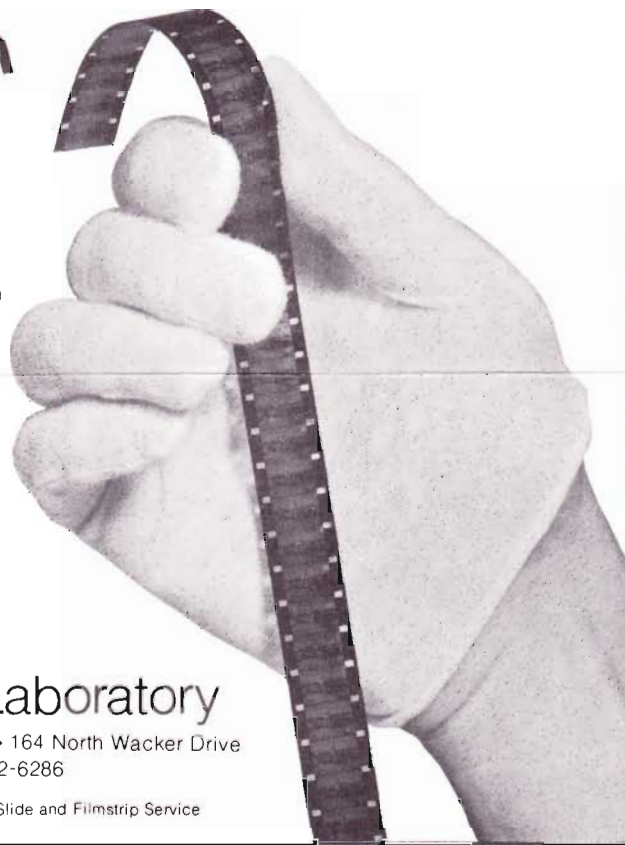
That year George Colburn became excited with the potential of this new medium and established a film printing business... the beginning of Colburn Film Laboratory. George was a mechanical genius whose inventions and innovations paralleled the technical development and growth of the industry. The lab soon became known for its quality prints and the ability to solve tough problems relating to film and sound.

Our lab is guided by this basic philosophy... "The Touch of Colburn". This means skilled personnel...dedicated to the production of quality prints and sound reproduction...using the latest in film technology...and sensitive to your goals. Movies are better than ever.

You invest a lot of time and care in  
your films. You deserve the same kind of  
concern at the processing laboratory level.

# The Touch of Colburn

That means working closely with you to  
fully understand your objectives.  
That means knowing the possibilities and  
limitations in film and processing  
to achieve the best results.  
That means combining sensitive editing  
with the proper sound.  
That means custom handling  
for quality prints.  
That means Colburn Lab  
for over 40 years.



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16mm and Super 8 • Editing • Titling • Recording • Workprinting • Release Printing • Slide and Filmstrip Service

# Professional Prints for the Professional Super-8 Producer

By ROBERT A. COLBURN

Super 8 is rapidly becoming a professional filmmaking medium. The producer's needs for this format are briefly considered. Special printing equipment has been developed and is described in some detail. The required precision, when preparing super-8 originals for printing, is discussed and splicing strictures are illustrated. Printing methods in accordance with the producer's requirements are described. Accessory equipment, such as title stands and other devices are now also available. Wet-gate techniques have been successfully applied in super-8/16mm blowup equipment. There are available numerous optical effects. A brief look into super-8's future is given.

SUPER 8, as was once the case for the 16mm film, was originally intended for the film amateur. Now it is rapidly becoming a professional film making medium, with many fields of application and with the same, if not greater, requirements for precision in the related machinery and for great accuracy in processing and printing.

Early in 1971, the Geo. W. Colburn Laboratory became aware, through numerous inquiries, that many specialized producers are turning to super 8 for original photography. Some of the contributing factors are: saving in rawstock cost, light weight and great portability of equipment, and the availability of a variety of sophisticated cameras, giving professional-quality results.

We agreed with this new category of producers that quality super-8 prints must be made available to them for quantity distribution as their needs may dictate. Therefore, George Colburn began work on a prototype super-8 con-

tact printer, the specifications for which included: capacity for printing A & B rolls; the making of fades and lap dissolves; checkerboard printing to minimize splice marks at scene changes; and overprinting of titles or other double exposures, comparable to what is already available in general 16mm production work.

The result was the super-8 A & B continuous contact printer (Fig. 1),

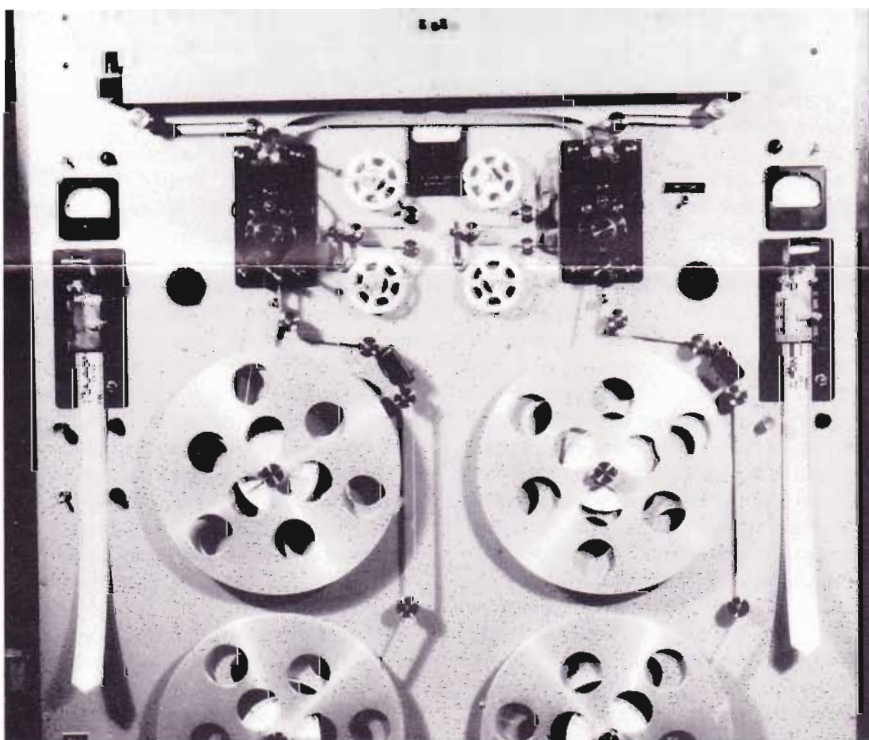


Fig. 1. Continuous contact super-8 A & B roll printer.

Presented on 25 October 1972, at the Society's Technical Conference in Los Angeles by Robert A. Colburn, Geo. W. Colburn Laboratory, Inc., 164 N. Wacker Dr., Chicago, IL 60606. (This paper, first received on 6 October 1972, received in final form on 11 June 1973.)



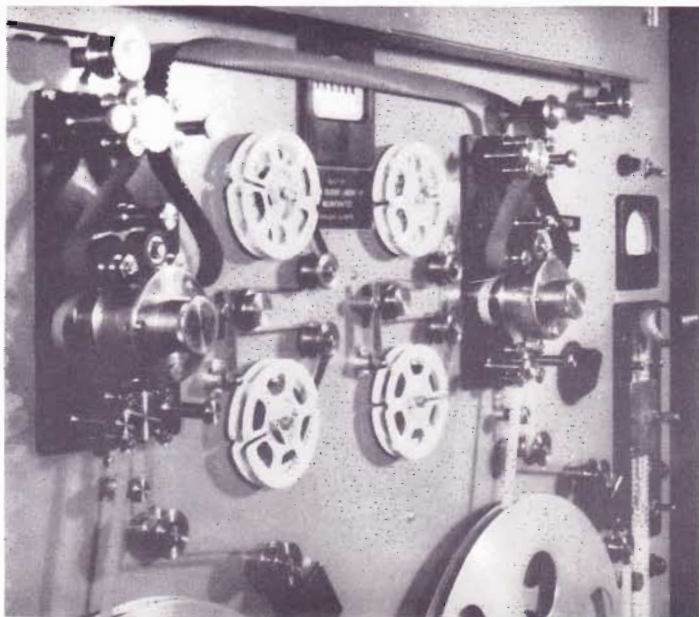


Fig. 2. Closeup showing squeegees and film path of super-8 A & B roll printer.

originally announced in October 1971 and also included in the Progress Committee Report for 1971.<sup>1</sup> The smallness of the super-8 format makes it impractical to place notches on the original to be printed, nor would it be easy to apply cue patches. Light changes are triggered, instead, by means of a separate 8mm-film control strip for each roll, running at approximately 1/24 the speed of the original being printed. This control strip carries punch marks which, in turn, advance what we call the program chart. The program chart, actually a piece of 35mm film, carries the light-change, fades, etc., program for the roll being printed in the form of a punch-code, which triggers the desired functions in synchronism with the original.

Figure 1 shows the general organization of the printer and more detail can be seen in Fig. 2. At the top, within a light-tight enclosure, is the rawstock on which a double super-8 internegative is to be printed. This facilitates the general thread-up of the machine under white-light conditions, once the rawstock has been loaded in the upper-compartment. Printing, of course, is done under dark-room conditions. As can be seen, the rawstock runs successively through two printing heads, printing the A-roll original and the B-roll original in one continuous operation. The originals are fed from the two big reels at the bottom over guide rollers and through specially designed vacuum and air-pressure squeegees, which clean the originals just before they enter the printing apertures. These squeegees can be seen next to the right-upper quarter of the large diameter take-up reels for the originals.

The four small reels in the upper-center part are holding the two 8mm control strips, one for each printing head.

The control-punch sensors, which activate the program charts, can be seen to the left of each control strip. Finally, at the extreme left and right the program charts are visible. These are the two pieces of 35mm film on which the punch-code perforations can be discerned.

After one side of the internegative has been printed, for example the left side, the rawstock is again transferred to the feed side of the rawstock compartment, the originals and the control strips are rewound on the machine itself and the other side of the internegative is now printed, again the A & B rolls in one direct operation.

At present, two lengths of faces or dissolves (20 or 40 frames, requiring 24- or 48-frames overlaps) and eight light intensity levels at 0.10 Log E intervals are available. No provision for color correction is made at this time, but modifications are being designed to handle color corrections as well as five additional fade lengths.

Figure 3 shows an internegative obtained with the printer described and a contact print not yet slit, made from this internegative. The internegative-positive method is recommended for obtaining quantity release prints in an economical way, especially since prestriped positive print stock is presently available for magnetic sound prints. For special effects such as montages or closer dissolves than can normally be handled on standard A & B printing, C & D rolls can be utilized through a second pass of the print film.

If only a small quantity of silent prints from the original is needed, the reversal duplicating method is used instead of the double super-8 internegative-positive method. The reversal procedure is not generally recommended,

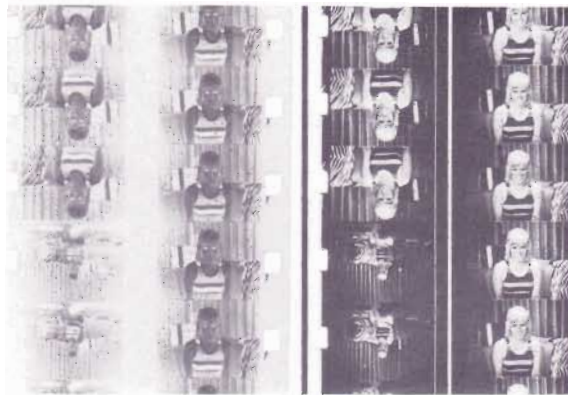


Fig. 3. Double super-8 internegative and double super-8 print on prestriped film.

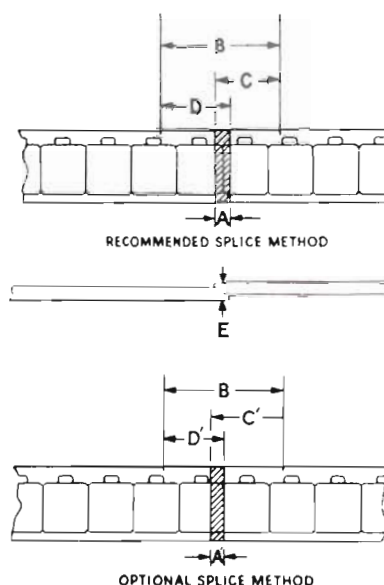


Fig. 4. Detail of Standard PH22.172.1, showing beveled splice and optional overlap position.

however, for sound, because a magnetic striping must then be applied individually to the emulsion side of each print after processing. The same printer can be used for the reversal method.

The utmost care must be taken when preparing super-8 originals for printing. Splicing procedures are extremely important in such a small-film format. Splices should be made in strict accordance with American National Standard PH22.172.1-1969, Dimensions of Cemented Splices on 8mm Motion-Picture Film Perforated Super 8, Projection Type.<sup>2</sup> This standard recommends a beveled splice to obtain an overall splice thickness very little more than the thickness of the film itself.

Figure 4 is a partial reproduction of the standard for super-8 splicing. Of the two types of splices shown, both beveled, the optional splice is the one which is essential for A & B printing, because the optional overlap position keeps the splice out of the image area and thus gives a "no-splice" effect in the print. The optional splice, however, must be cut



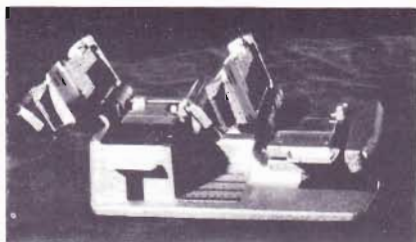
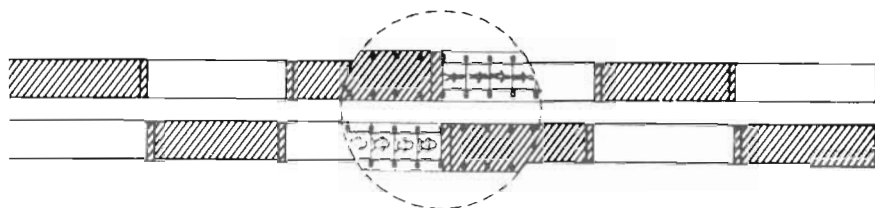


Fig. 5. Bolex 8mm splicer.



SCRAPE PICTURE ONLY — NEVER SCRAPE EMULSION FROM BLACK LEADER

Fig. 6. Checkerboard technique for A & B roll preparation (Courtesy ACL Handbook).

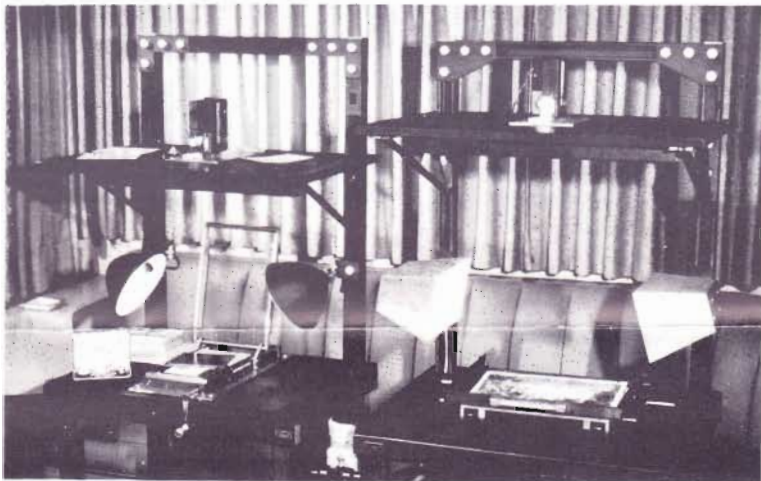


Fig. 7. Title stands (4- × 5-in and 9- × 12-in) for super-8.

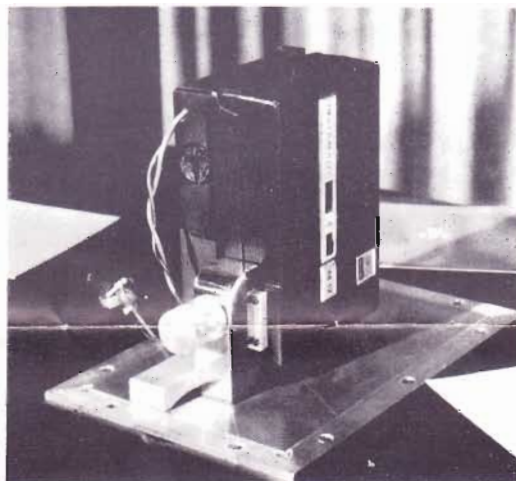


Fig. 8. Modified Eastman Kodak M-12 camera on 4- × 5-in title stand.

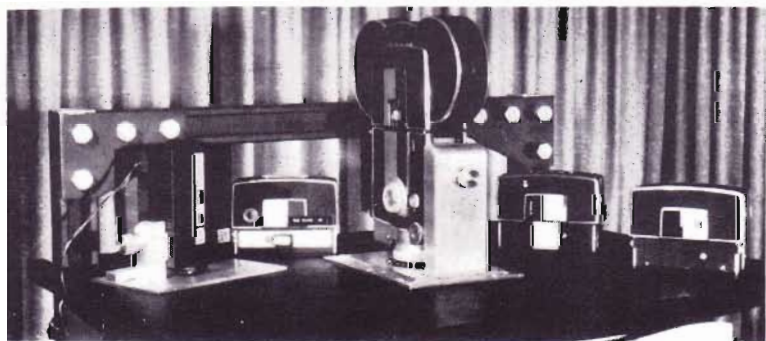


Fig. 9. Elmo convertible magazine camera on 9- × 12-in title stand.

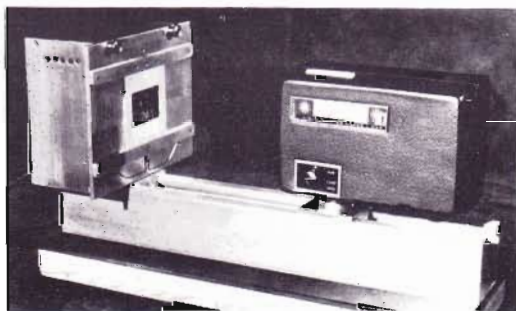


Fig. 10. Horizontal bench with Eastman Kodak M-12 camera for reproducing transparencies (2- × 2-in or 110).

and placed to more precise tolerances than the first recommended splice. There are several good cement splicers for this film format on the market. We found the Bolex 8mm splicer (Fig. 5) suitable for the job.

However, if "reverse" splicing of the black leader is needed, as illustrated in the third edition of the *Handbook* of the Association of Cinema Laboratories<sup>3</sup> (Fig. 6), the regular 8mm pins must be removed from the splicer. As can be seen from this illustration, when using the checkerboard technique for making invisible splices in the preparation of A & B rolls, the overlap portions of adjacent splices for the same edit-cut or scene change must fall in opposite directions on their respective black leaders in order to be invisible. This cannot be achieved while the regular-8 pins are in place.

In general, most of the techniques described in the *ACL Handbook* for the

preparation of 16mm A & B rolls are equally applicable to the super-8 format. One exception is the "zero-cut" technique, which cannot at present be used with our printer; also, tape splices cannot be accepted in the assembled original for printing. Three-gang super-8 footage counters and synchronizers are now commercially available, and should be used to keep the work print and the A & B rolls properly synchronized. If such equipment is not readily accessible to the producer, the laboratory must then set up the A & B rolls from an edited workprint, properly marked for scene changes, fades, etc., and from the uncut originals just taped together in proper sequence.

Appropriately enough, acceptance of super 8 as a professional production tool has spawned a whole new family of complementary super-8 facilities, such as title stands (Fig. 7). Our figure shows two fixed title stands for the 4- × 5-in

(102- × 127-mm) and 9- × 12-in (229- × 305-mm) formats. Both can be used with modified M-12 Kodak cameras (Fig. 8), and the 9- × 12-in stand accepts also a Honeywell Elmo convertible magazine camera, which can handle zoom and other effects (Fig. 9).

While these stands are of the vertical type, a horizontal setup has been used on a small bench with an illuminator and another M-12 camera for the reproduction on super-8 film of 2- × 2-in (51- × 51-mm) slides for the newer 110 format transparencies (Fig. 10).

One of the most important developments is the completion of a special super-8/16mm optical blowup printer, incorporating the wet-gate technique (Fig. 11). Excellent-quality, direct-blowup 16mm prints can be obtained with this printer, without the imaging of undesirable base scratches the original may exhibit. Silent reversal release prints, masters on Eastman Ektachrome