Galley GAB

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INK IT'S NOT ALL BLACK & WHITE

BY JOHN HENRY

One of the most often asked questions by beginning letterpress printers is "What kind of ink is best for letterpress?" Unfortunately, there is no one correct answer to that question. There are available to printers a wide range of ink formulations, each has its quirks and uses.

First let's take a look at what makes up a can of ink. Inks can generally be roughly divided into four components: pigment, vehicle, binder and additives. Pigment is what we see when the ink is cured and is the primary component which forms the image which is viewable. Inks do exist without pigment, but they are generally called varnishes and are used for over-coating or protective finishes on paper and other substrates.

Pigments can be made directly from

mineral materials being finely ground, colors produced through chemical interactions, or naturally-occurring colors from organic materials. Most black pigments are produced by burning oily materials and collecting the soot produced in the process. At one time it was common to use cobalt and chromium to produce particular colors in pigment form. These chemicals are now more carefully controlled as they have carcinogenic components, so less harmful replacements are used instead. The letterpress printer's favorite element, lead, was generally the most popular component of white pigments (in its oxide form), but now has pretty well been superseded by titanium dioxide and calcium carbonate in modern formulations.

It is important that the pigments be finely ground so that they are not overly abrasive on the image carrier (type or plates) and the inking system. The fineness of grind also allows the pigment to be suspended evenly in the other ink components, creating a nice, even film on the surface being printed.

The vehicle is the primary component of ink, which actually "carries" the pigment particles and keeps them suspended during the printing process. The vehicle also can serve to surround the particles of ink and impart a gloss to the ink film. In the greatest share of litho and letterpress inks, the primary vehicle is a clear varnish created by thickening an oil like linseed, soy, or mineral oils. Most textbooks on the subject of inks and ink-making cite the first description of ink-making by Moxon in his treatise on printing. The accumulated linseed oil is boiled outdoors in a cauldron for a period of time until it reaches the requisite thickness, then flames are applied to the top of the cauldron and the boiling oil is set on fire to further treat the oil for use. I'm certain you can imagine why this operation was described as an out-of-doors activity.

Binders and drying agents are added to assist the ink in drying into an even film on the surface. Linseed and Soya oil are both drying oils, which means that even without addition of a drying agent, they will eventually form a skin and solidify over time. Other mineral oils and oils from other sources do not have this characteristic, so require addition of chemical agents or other varnishes which will crosslink and cure that film of deposited ink. Some of these are cobalt, china wood oil (otherwise known as tung oil), and heavily boiled linseed oil. There are both liquid and paste driers, and it seems generally agreed that the paste-form driers are better to use if the ink film is to be overprinted with another color of ink. The liquid driers tend to form a crystalline surface, which rejects secondary ink films.

Some additives can be added to inks assist with the printing operations, others add various characteristics to the finished ink film. Waxes are often added to inks to provide greater gloss and rub resistance to the ink film. Other additives change the viscosity (body) of the ink to allow it to flow more or less when being printed. It is critical that the printer select a wax-free ink if the image is going to be overprinted with a foil stamping process as the foil adhesives will not stick to a waxy surface.

Most generally, the inks from the manufacturer are balanced with the proper amounts of each component to be useful to print. Adjustment will have to be made by the printer when printing on

specific substrates or to give the ink film a special effect (high gloss or matte, for instance).

Oil-base Inks

Traditional letterpress inks (from the 15 Century onward) were composed of boiled vegetable oils, mineral and organic pigments, and lots of patience and skill in the ink-making process. Boiled Linseed oil was the primary drying oil used in ink manufacture. With the onrush of modern chemical technologies, other vehicles are now available to use.

I choose to primarily use oil base inks in my printing. I find them to be (for the most part) easy to work with. I use inks designed to be used on high-speed litho presses. The pigments are finely ground and generally the body of the ink is not too heavy. This means that they distribute well in the inking system and require less ink to form a good image density.

With the appropriate dryers, oil base ink dries more on the surface of the paper than absorbing into the fibers. That's a pretty simplified statement, but generally holds true. Because the inks dry hard, whatever you print can be run through a laser printer without problems of ink picking up on the fuser or the printer. This particularly becomes an issue if printing stationery or envelopes which may be personalized on the laser printer.

I also find that I can back up sheets sooner with oil base inks, allowing me to finish printing a job in a shorter period of time.

Rubber Base Inks

Many small press printers swear by Rubber Base inks, and get very good results from their labors. Rubber has been a component in ink for quite some time. Mention of its use is found in ink formulation books from the early 20th Century. In use of the term these days, many different formulations can be found with varying percentage of Isomerized Rubber. The property that all these rubber-based inks share is drying more by absorption than by contact with the air. The inks will not dry rapidly on pieces of equipment, but will set once they are applied to paper.

Rubber base inks are not recommended for use on anything but fairly absorbent uncoated printing stock. It is not a good choice for printing on clay-coated papers or plastic substrates. Their popularity has come primarily because they do not dry on rollers if left for a period of time, and even when dry, standard solvents can be used to clean the rollers or ink plates.

I regularly use rubber base inks when printing with numbering machines. There is always some ink which I find hiding in various parts of the machines, and it is easy to clean a rubber-based ink whereas the oil-based inks dry to a hard surface which is more difficult to remove.

Rubber-based inks are also a good choice for teaching labs and studios, where there may be many operators who have varying degrees of knowledge and commitment to keeping the equipment in good working order. The forgiving nature of these rubber-based inks allows for a student to leave a press inked up between classes or for a few hours without worry that the ink will cure before it gets cleaned.

Ink Mixing for Color Consistency

Most of us involved in operating small letterpress presses are the captains of our own fate, and have control over the design elements of the products we produce. If, however, one takes on job work, the choice of color is just one of the elements which may be governed by outside opinions, and must be controlled to make the customer satisfied with the end product. There

Ink mixing by volume can be useful to the printer without scales to use. Photo by Henry.

is a system generally used to specify colors in the graphic arts and printing industries. It is called the Pantone Matching System.® A typical Pantone book used by printers consists of patches of various families of colors and related numbers which can be used to communicate that color from the designer to the customer and eventually to the customer. The system provides a common language of color which can be used throughout the life of the job to make certain that all parties involved realize the wishes of the others.

The printer, mixing inks to obtain a specified color, uses a book which lists the proportions of ink color to use to come up with a match to the color. Here is a typical color specification:

Pantone 185

12 parts Pantone Warm Red – 75%
4 parts Pantone Rubine Red – 25%

You will notice that the formula is listed both in "parts" and in "percentages so as to be flexible enough to match whatever concept the printer may wish to use in mixing. The formulas are designed to be mixed by weight, but the small printer who doesn't have access to a calibrated scale can still mix fairly accurately by mixing by volume. If mixing very much for outside customers, however, one would probably choose to purchase a scale for use in ink mixing.

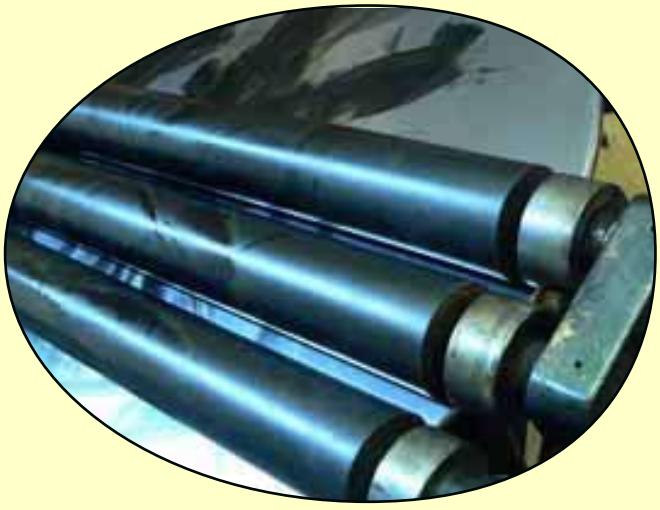
To mix by volume, simply scoop out a "gob" of ink (that technical jargon once again), and match it with a gob of the other color approximately the appropriate amount less and mix them together well. It is good to do this on a piece of plate glass which can be readily cleaned after the mixing. When mixed, take a small amount of the ink on a clean ink knife or the tip of a finger, and tap or draw it along a piece of the printing stock for the job.

The accuracy of an ink mixing scale (analog or digital) can bring more consistency and accuracy to the ink mixing process. Photo by Henry.

Then compare the resulting color with the swatch in the color guidebook. You may find you have to adjust the color a bit to get just the match you need depending on the brightness and color tint of the paper. The guidebook was designed for use with the ink films as printed by offset lithography, so you may find your letterpress able to carry and transfer a thicker ink film. This variation in ink film can be accounted for by adding a bit of transparent mixing white to the formulation. Some claim to require as much as 25% of the mixing white to obtain the correct color. If it is a very critical application, ink up the press and do a few test prints on the actual printing stock to verify that the color is as it should be.

The Pantone mixing system requires that you maintain a basic set of colors, about 20 individual colors. The real advantage is that from these colors one can mix the full gamut of the mixing book. It is thus much more economical than having a custom-mixed batch prepared for each job to be run. If you have a customer who uses the same color all the time, it might pay you to have your ink company mix the color for you. Make certain, however, that they understand that you are printing by means of letterpress.

I find myself less persnickety in mixing colors for my own entertainment or work. If fairly close to the color I intended, I am usually satisfied. Now, when printing wedding invitations for my daughter (an interior designer) I was held to a higher standard of color consistency. The important thing is to make the customer happy, whether that customer is yourself or someone else.



Inking the Press

One of the most frequent problems confronting a newcomer to letterpress printing is over-inking the press. If a little bit works, a whole lot will work better. That is not the approach to take when printing by letterpress. Start with a minimum amount of ink on the press and add little-by-little until the color is maximized. Too much ink to start with can mask problems with packing and impression, so it is better to begin with a very minimum amount as one is making ready the press. After a while the press operator becomes accustomed to the proper "hiss" of the ink as the rollers run over the inking plate, or as the rollers sit on the driven distributor roller on a proofing press.

The trick to good quality in printing comes in keeping a consistent amount of ink on the rollers throughout a press run. Some presses are equipped with ink fountains which meter out just a small amount of ink after each impression. If properly adjusted, these fountains can make printing a very controllable process. Many smaller presses have no such fountain, or the run is so small that use of the fountain would be wasteful of ink. In these cases, it is sometime well to roll out an amount of ink on a plate (other than the press's inking plate) and add ink to the ink plate with a brayer as needed (could be every 10-20 impressions). If control is not so critical, a touch of the ink knife to the lower left edge of the inking plate, or to the top of the vibrating distributing

roller on the proof press, will provide ample ink for a continuation of the run.

Many books have been written on the subject of ink, ink mixing and good presswork. I hope this short article will assist in understanding some of the concepts of ink use on a small press.

John G. Henry is proprietor of the Cedar Creek Press in his off-hours; he is R&D and Technical Manager of Metalcraft, Inc., a manufacturer of nameplates and labels in Mason City, Iowa.

Henry started his printing career when Santa left a rubber type printing set under the tree when he was ten years old. He progressed quickly to a Kelsey Union foot-treadle operated press when in Junior High, and has continued his collecting of letterpress paraphernalia to the present day.

Henry studied at the University of Iowa with both Harry Duncan (Cummington Press) and Kim Merker (Stone Wall & Windhover Presses), graduating with a major in Journalism & English. His educational journey continued in Rochester, New York, where he obtained a M.S. in Printing Technology from Rochester Institute of Technology.

After teaching at Oklahoma State University and Northern Illinois University for a number of years, Henry and family moved to Mason City where he was General Manager of Kayenay Engraving, a letterpress engraving and color separation shop. When Metalcraft sold the Kayenay business in 1992, he stayed with Metalcraft.

Announcements published

One thing I would like to mention – as I really never "promoted" this before – is that *Galley Gab* welcomes any announcements pertaining to letterpress. This could be any special events, and these might include seminars pertaining to letterpress, auctions, etc., etc. (you get the idea).

Remember that *Galley Gab* is published the first day of each month so virtually any event after that day until the end of the month is fair game for publication.

While making announcements, I should also say that readers are very much invited to write me and comment on the issue and/or suggest articles, etc. I have a very tough skin and am open to any constructive criticism, which may improve *Galley Gab*. Let me hear from you. I know you're out there – all 800 or so of you!

Do you print out *Galley Gab*?

If you print out Galley Gab and would like a PDF that does not have the yellow background, please **email me** and I'll send you one.

Galley GAB

...is published on the first day of the month. It is free and can be downloaded from this site.

Mike O'Connor, Editor-Publisher

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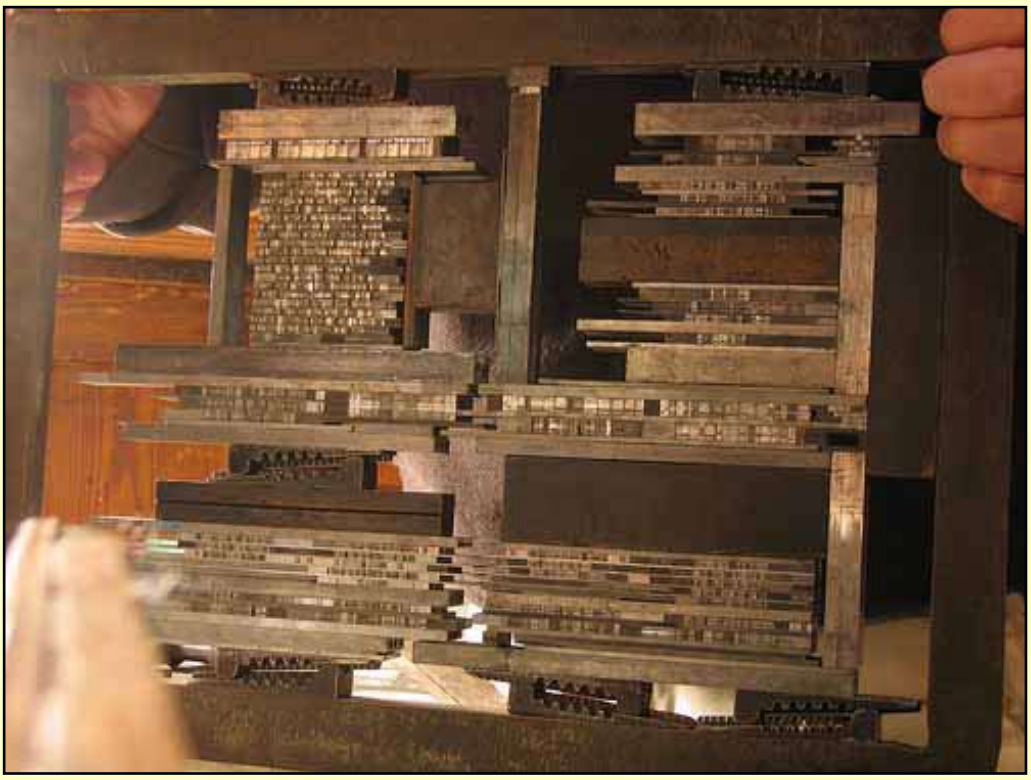
Galley Gab is published for the letterpress community. All letterpress printers are invited to comment and participate in each issue. All unsigned articles are those of the editor. Signed articles do not necessarily represent the views of *Galley Gab*. E-mail the editor for information on submitting material for publication or expressing an opinion.



ANYTHING GOES!

The above photo was proudly displayed in the **flickr** "photo community" with the headline: "40 hours of work." Indeed.

There really is no excuse for such a lockup fiasco.

Why would this person, who apparently was interested enough in the process to invest 40 hours of his/her time, not take the time to learn more about the process?

Certainly since the 60s and 70s commercial letterpress printing has faded from the scene. This almost meant that you no longer, for the most part, could learn from these trained tradesmen; unions no longer offered letterpress education and trade school teaching letterpress dropped off the face of the earth.

One thing these old masters of the craft did leave behind were many books on the subject. And these old masters learned from those before them. After all, we're talking about well over 500 years of letterpress printing!

Some might scoff at "proper procedure" and prefer the "anything goes" approach. I fail to understand why there are people out there who insist on trying to reinvent the wheel.

Now don't get me wrong. I've broken the "rules" once in a while. But I think you have to know the rules, how they work in order to "break" them successfully.

Thankfully there are letterpress "instructors" out there. There are some really good ones and then there are some borderline folks. But some education from most any of them is more than likely better than none at all.

There really isn't any excuse for the lockup shown. A little Googling online would have produced a wealth of information for the person who locked up the above. There was no information as to whether this actually printed.

I dare say that we have (or had) a very enthusiastic person doing the above work. He or she must have been thrilled about letterpress. But was all of that lost once this form went on the press and it fell apart and suddenly thousands of slivers of metal type laying on the floor. What happened to the enthusiasm?

Letterpress does have its rules. They are the result of over 550 years of trial and error. That's a pretty good stretch of time to find out what works best and what doesn't.

My reaction to the above photo is that one should first learn the rules (read books, attend classes or get close to a letterpress printer–hopefully a good one!), then practice them and then, and only then, should you consider breaking the rules.

– Mike O'Connor, Editor

Making polymer plates

MY TAKE | **Jason Wedekind,** Denver, CO**:**

My Take
READERS RESPOND

After reading the last issue of GG and seeing how other people were home developing their photopolymer plates, I thought I'd share what I've been doing. I learned the home developing process from Tom Parson and saw his set-up complete with a homemade vacuum frame for his contact box. When I "rescued" my press from a shop that was liquidating, I noticed the owner had what appeared to be an offset plate maker in the corner that was all dusty (like everything else in there). It had an 800 number on the front of it from the '80s, which I called and got an answer (I was pleasantly surprised). I asked if they had a UV light bulb that would develop photopolymer and they said that I could get one online for around $125. That drove the cost from $300 that the printer was asking for it down to $100 with some successful bargaining. I figured it'd cost that much to replicate Tom's vacuum seal UV light bank.

I got it home, played around with the Stouffer scale and was up and running in no time. It has the vacuum, timer and on/off all built in and programmable. I run different times for different types of artwork. I went the Boxcar Base route, complete with washout brush from them and just bought the sticky back mounting rubber which works so well, I can't believe I didn't think of that sooner (I had been holding the plates in my hand for the last year) not as exact as desired.

The only drawback I can tell is that without more than one light source (mine basically has a gate on it at the top of the unit that is mechanical),

I don't get the nice beveled edge that you do when there is more than one light bulb. BUT, I am going to work on that by walling the unit with mirrors in hopes that bounces the light around a little better. I'll keep you posted.

So if you're itching to develop your own plates at home, a few calls to local offset printers may land you another option to get started.

One more item worth mentioning. I found a reasonable service bureau in Denver that makes negatives for roughly $10 for an 8.5x11" page. I wasn't having good luck making negs with my HP LaserJet 4V. I can usually gang a few jobs up and get my money's worth.

LETTERPRESS Tips

SEND IN YOURS — WRITE THE EDITOR

(Editor's note: These "tips" are taken from *Type & Press,* a wonderful letterpress related journal – no longer published – edited by Fred Williams.)

To prevent type cases from slipping from slides when pulled way way out to reach top compartments, first pull out a typecase right below half way out. This will support the case being used and prevent accidents.

Those small muffin baking tins [or ice cube trays] make perfect receptacles for copper and brass spaces.

When leaving platen presses idle for a considerable length of time, always leave roller saddle springs in a position where there is less strain. This often is about in the center of the bed. This will reduce the risk of them breaking. No form should be in the press.

Acting as a dry lubricant, talcum powder sprinkled on the top sheet, will allow for faster and easier platen press feeding.

MUSEUM AT GUTHRIE, OK

Historic printing plant toured

EQUIPMENT LEFT IN PLACE AS IT WAS OVER 30 YEARS AGO

Some visitors swear seeing printer ghosts

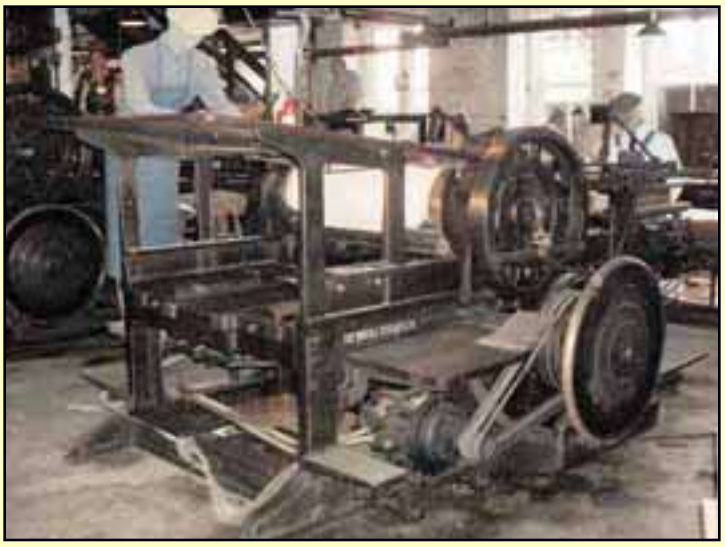
A line-up of platen presses, today manned by faceless dummies. Over 30 years ago these presses were all running full speed producing various printed pieces.

The State Capital Publishing Museum, Guthrie, Oklahoma

Composing stones and Linotypes in the background.

Special thanks to George Chapman and Warren Gailbreath for supplying the photos for this article.

Ever dreamed of stepping back into time and those steps taking you into a fully equipped large commercial letterpress shop? Members of the Amalgamated Printers' Association did just that at their Wayzgoose meet in Oklahoma City in June. Part of the program included a trip to Guthrie, Oklahoma, and a tour of the State Capital Publishing Museum where most of the letterpress equipment is still in place as if it was just left – except it was more than 30 years since the letterpress plant closed. A



Those "dummies" at it again...running the Miehle.

An expanded view of some of the larger presses.

Elrod rule caster with cooling unit and a Miehle press.

Almost an entire wall was covered by these individual wooden drawers which at one time held various government forms.

few of the APA members swore they saw the ghosts of the printers past at their machines!

The museum was built in 1902 by Frank Greer to house The State Capital newspaper. In 1912 he sold the newspaper and the building then housed the Co-Operative Publishing Company. They published books, ledgers and numerous official state forms.

Because the tour was composed of all letterpress printers, the group was able to go beyond the "observation platform" and get up close to all of the equipment. Some forms were still on the stones locked up and ready to be printed. It looked like with a little cleaning and oiling, everything there could be up and running in no time at all.

One member of the tour group, John Horn, said he visited the museum 25 years earlier. "It looked like the bell went off one Friday afternoon and the crew took off their aprons, laid down their line gauges and just didn't come back to work the next Monday," Horn said. He related that during his first visit there were still stacks of paper sitting around waiting to be printed and job tickets laying on the stones giving printers their instructions on the printed job.

Another APA member, Hal Sterne, said that the museum at Guthrie probably has the only letterpress printing plant in the world where

A calendar (two-up) print job locked up just as it was left years ago.

Pressmen (?) at work!

ATF LIttle Giant press.

Hickock pen ruling machine.

everything is in place the way it was when the last employee left – probably in 1974 when the plant closed.

The museum is a four story, 50,000 square-foot building. There are two floors for public viewing. On the entrance floor is the sales area still housing much of the original furniture and counter space. In the basement are the presses, Linotypes and other equipment needed to printing and publishing. But all the equipment is quiet.

Rich Hopkins, when asked for his comments on the silenced presses and Linotypes said, "The place is obviously dead, dead, dead. It needs some life. They need some operating exhibits and workshops so they can get folks involved in letterpress." Then with a sigh added, "There is so much nice equipment here but I fear they're not focused on anything of that nature!"

Joe Warren said he was impressed with the whole building. He noted the huge oak-drawer filing system along one wall. He was also impressed with the second floor bindery equipment and made special note of the Hickock Pen Ruling Machine and mentioned that the operator of that machine was no doubt the highest paid person in the shop.

If ever in the Oklahoma City area, a trip to Guthrie is worth your time.

NA Graphics builds

Customers of Fritz Klinke's NA Graphics won't notice any change (unless you pick up your order in Silverton, Colo.) but by September the company will be in new quarters.

Klinke said construction will start in July for a new 9,200 sq. ft., two story building in a small industrial park in Silverton. The only drawback to the new building, says Klinke, is that "it increases my commute time from 90 seconds to three minutes."

The move became necessary when he sold his present building and at the same time got out of the food service operation. He mused that life should become more pleasant in that he will no longer have to go in and cover for someone whether it be a dishwasher or cook. (Klinke also is a co-owner of a construction company.)

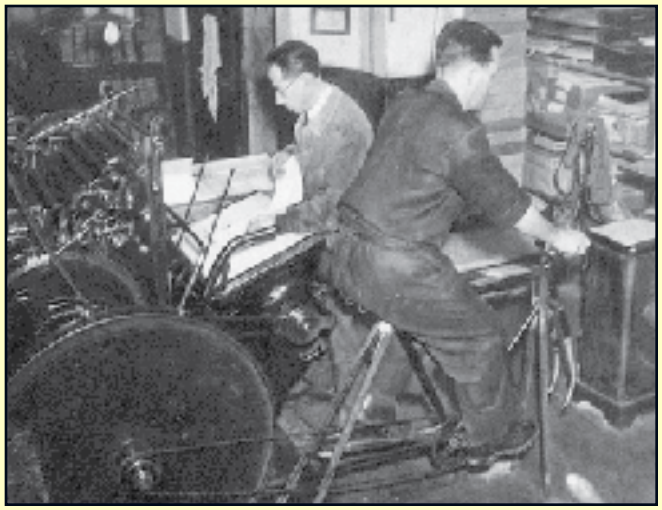
He said he doesn't plan any radical changes but the new building will allow him to rearrange things for a smoother working situation. He plans to move his Linotype, Ludlow, Monotype and Elrod to a new garage he is building in the back of his house. It will also house his presses: the C&P, Little Giant and Miehle Verticle.

Klinke said the new building will also house a wood shop which is part of the construction company.

Why a photo of this beautiful scenery? This is just one view Fritz will have from his new quarters. Will he get any work done?

pied

SEND IN YOUR ITEM TO THE EDITOR



Some French resistance printers during WWII. The photo is published here for those with an adversion to motorized presses or treadles!

For you YouTubers, here are a couple of sites to check out: Typography School and New typography is the future.

Paul Moxon will be conducting an extensive maintenance session on the Vandercook, August 10 and 11 at the Book Arts Studio, Marriott Library at the University of Utah. Workshop fee is $150 with a $5 materials fee. For more information contain Jen Sorensen via email or call her at 801-585-9191.

Check this site out for some interesting stories about the final days of letterpress at a couple of newspapers and one story on the LA Type Foundry. Interesting reading.

The 1899 issue of *Inland Printer* sets out some details concerning a type order Barnhart Brothers & Spindler received from the Government Printing Office:

"…in the 100,000 pound font of 10 point there are 6,400 pounds of lower case e's alone; reckoning 471 of these letters to the pound, there are 3,014,400 letters, and this number of e's laid end to end would reach 591 miles. One man would, on one machine, work nearly four months steadily in casting the lower case e's.