http://www.chattanoogan.com/2006/7/27/89955/Remembering-the-Ditto-and-Mimeograph.aspx

Remembering the Ditto and Mimeograph

The ditto machine (spirit duplicator) and mimeograph (stencil duplicator) were competing technologies in the document-copying market. I learn that the mimeograph can be traced to inventor Thomas Edison, who patented a stencil duplicator called “autographic printing.” Albert Blake Dick invented the mimeograph in 1884, and Wilhelm Ritzerfeld gave us the ditto machine in 1923.

The mimeograph printing process used an ink-filled cylinder and ink pad. Documents had to be prepared on a special wax-covered stencil on a typewriter which had its ribbon disengaged. The typewriter thus made impressions in the stencil, which were filled with ink and squeezed onto paper by the mimeograph’s roller. The stencils could also be used with drawings made by hand.

In contrast, the ditto machine used no ink. The user typed, wrote, or drew on a ditto master sheet which was backed by a second sheet of paper coated with a dye-impregnated, waxy substance. The inscribed image appeared on the back of the ditto sheet in reverse. The ditto machine used an alcohol-based fluid to dissolve some of the dye in the document, and transferred the image to the copy paper.

Though other colors of ditto sheets were available, purple was commonly used. In elementary school, I remember that the teacher would distribute drawing sheets for us to color. The sheets had been through the ditto machine, which gave purple outlines to the drawings of fruit, animals (mostly lions and tigers and bears), letters, numbers, and everything else that we were asked to stay within the lines while we colored.

The output of the ditto machine had a special aroma. Students could tell when a class assignment was hot out of the machine by the strength of the odor of the pages. The smell came from the ditto machine’s duplicating fluid, a mix of methanol and isopropanol.

The school office staff typed announcements, and then ran them through the ditto, for students to take home. “Now, boys and girls don’t forget to give this to your parents so that they will know about our field trip” was something that the teacher often said while handing out the purple forms. The night before a school play, some moms found crumpled purple announcements in which they were asked to make costumes.

https://www.quora.com/What-Was-It-Like-to-X-What-was-it-like-to-work-in-an-office-before-the-birth-of-personal-computers-email-and-fax-machines

What Was It Like to X?: What was it like to work in an office before the birth of personal computers, email, and fax machines?

Mimeographs typically printed with black ink and should not be confused with ditto machines, which printed in purple. Ditto machines, which looked like this

...were a little simpler and cheaper to operate, and were used by teachers to create classroom materials all through my public school education, from 1962-1973. Ditto masters were thick white glossy top sheets attached to thick purple backing sheets. When you wrote or typed on a ditto master the purple ink on the inside of the backing sheet would adhere to the back of the white top sheet. If you made a mistake you could use thin paper tape to cover it on the back of the white top sheet and type or write over it again, or you could use a single edge razor blade to shave the mistake off the back of the white top sheet, then type or write over it.

http://blogs.chicagotribune.com/news_columnists_ezorn/2007/01/ditto_machines_.html

That ditto high is harder and harder to duplicate

A ditto was a school or church handout, nearly always in purple ink, sometimes moist and fragrant from the machine just down the hall.

"That smell was frying your brains," said Fred Keen, 71, of Tenafly, N.J., one of America's last remaining salesmen of ditto fluid. "It was pure methyl alcohol."

I tracked down Keen for more information when the online conversation about old-fashioned copying techniques veered into a celebration of dittos.

Keen's family business, Repeat-o-Type Manufacturing Corp., has sold supplies for what's formally called spirit duplication since the 1950s.

The process involves creating a master copy on a "spirit carbon," and transferring that to a hand-rotated printing cylinder. Ditto, Inc., a long-gone Chicago company, was such a dominant manufacturer of the machines that the company name became generic.

Keen said his company, wholly owned since 2004 by Ink Technology Corp., sells only "a couple of thousand" gallons a year of ditto fluid to supply the last machines still churning out copies in isolated backwaters.

One reason dittos began to decline was a concern that the vapors were unhealthy. Though highly volatile methyl alcohol (also called methanol) isn't a carcinogen, studies showed that school personnel who hung out at the spirit duplicator suffered particularly high incidences of headaches, dizziness, nausea, blurred vision and other ominous symptoms.

In other words, the "high" that we got from inhaling deeply from pop quizzes the teacher handed out was actually more like a temporary illness.

Another reason dittos disappeared, Keen said, was that photocopier companies successfully sold school administrators on the idea that the versatility and ease of use of their devices made it worth junking ditto machines and their high-volume cousins, the mimeograph machines.

Yes, the ditto and the mimeo' made way cheaper copies - as low as a quarter of a penny each -- and were much less prone to breakdown than the early photocopies. "But Xerox just took over," said Keen.

https://en.wikipedia.org/wiki/Duplicating_machines

Spirit duplicators

The ditto machine (spirit duplicator) sold by Ditto, Inc., used two-ply "spirit masters" or "ditto masters". The top sheet could be typed, drawn, or written upon.[citation needed] The second sheet was coated with a layer of colored wax. The pressure of writing or typing on the top sheet transferred colored wax to its back side, producing a mirror image of the desired marks. (This acted like a reverse of carbon paper.) The wax-supply sheet was then removed and discarded, and the other sheet (containing the images) was fastened onto the drum of the (manual or electrical) machine, with the waxed (back, or reverse-image) side out.

The usual wax color was aniline purple, a cheap, moderately durable pigment that provided good contrast, though other colors were also available. Unlike mimeo, ditto had the useful ability to print multiple colors in a single pass, which made it popular with cartoonists. Spirit duplicators were incapable of double-sided printing, since the saturation of the paper with solvent inherent to the process would destroy a previously printed image. One well-made ditto master could at most print about 500 copies, far fewer than a mimeo stencil could manage. To produce further copies, an entirely new master would have to be reconstructed in the same way as the original master.

Notoriously, dittoed images would gradually fade with exposure to light, limiting their usability for permanent labels and signage. Dittoed copies now pose a serious challenge to archivists responsible for document textual and artistic preservation.

Comparison of mimeographs and spirit duplicators:

Ditto machines and mimeograph machines were competing and complementary technologies during the first half of the 20th century. Mimeography was in general a more forgiving technology, and still survives in various forms into the 21st century.

Ditto machines required much finer operating tolerances and careful adjustments to operate correctly. Overall print quality of spirit duplicators was frequently poor, though a capable operator could overcome this with careful adjustment of feed rate, pressure, and solvent volume.[citation needed]

During their heyday, tabletop duplicators of both sorts were the inexpensive and convenient alternatives to conventional typesetting and offset or letterpress printing. They were well suited for the short runs used for school worksheets, church newsletters, and apazines. Even the least technically minded teachers, professors, clergy, and self-publishers could make use of them.[citation needed] The machines owed most of their popularity to this relative ease of use, and in some cases, to their lack of a requirement for an external power source.

Mimeograph machines predated the spirit duplicator, had a lower cost per impression, superior print quality, finer resolution, and if properly adjusted could be used for multi-pass and double-sided printing. Also, mimeographed images were as durable as the paper they were printed on, and didn't bleach to illegibility if exposed to sunlight, the way that dittoed pages did. A good mimeo master could produce many more copies than the best ditto master. As with ditto masters, mimeo stencils could be saved and reused for later print jobs.

There are still mimeography enthusiasts in the United States and Canada, and mimeo technology is still in everyday use in the Third World, since many low-cost mimeograph machines do not require electricity to operate.

http://atomictoasters.com/2012/03/what-ever-became-of-ditto-machines/

What Ever Became of…Ditto Machines?

Often mistakenly referred to as mimeograph machines, spirit duplicators were invented in the 1920's. Instead of ink, a solvent on each sheet of paper would dissolve some of the pigment from the stencil, with purple being a common color due to its better contrast.

The duplicator used two-ply "spirit masters". The first sheet could be typed, drawn, or written upon. The second sheet was coated with a layer of wax that had been impregnated with one of a variety of colorants. The pressure of writing or typing on the top sheet transferred colored wax to its back side, producing a mirror image of the desired marks. (This acted like a reverse of carbon paper.) The two sheets were then separated, and the first sheet was fastened onto the drum of the (manual or electrical) machine, with the waxed side out.

There is no ink used in spirit duplication. As the paper moves through the printer, the solvent is spread across each sheet by an absorbent wick. When the solvent-impregnated paper comes into contact with the waxed original, it dissolves just enough of the pigmented wax to print the image onto the sheet as it goes under the printing drum.