

TOOLS of the TRADE



Apple iPhones

As promised, Apple released two new iPhones in September, replacing the iPhone 5 with two new versions: the iPhone 5s and the 5c.

Designed to capture the China market, the iPhone 5c will retail at \$99 for 16GB of internal memory and \$199 for 32GB of memory with a two-year contract. It has a four-inch retina screen, an A6 chip, an eight-megapixel rear camera, and a new FaceTime camera. The 5c comes in a choice of five colors—green, blue, yellow, red,



and white—and has a plastic case with the back and sides milled from a single piece of polycarbonate. Apple has also made covers of soft-feel silicon to coordinate with the 5c colors. An internal steel frame adds strength to the body.

The iPhone 5s is available in slate, silver, and gold models. It also has a new basic chip, the A7 with an M7 motion co-processor. Both phones are on iOS 7, which was rolled out two weeks after the announcement, and the new operating system includes a Pandora competitor, iTunes Radio. In addition, all new iOS 7 devices come loaded with a suite of iWork applications, including Keynote, Pages, and Numbers, which are productivity apps compatible with Microsoft Office (PowerPoint, Word, and Excel). All built-in apps have been reengineered for the 64-bit processor, which will run 32-bit apps as well.

The 5s also has a new fingerprint Touch ID that lets you lock and unlock the phone with the touch of a finger. You can register more than one finger, and the Touch ID also works to validate purchases at the App Store rather than you having to enter

an ID and password each time. A number of other improvements include a five-element, eight-megapixel f/2.2 photo lens, two flashes for color correction, automatic image stabilization, face detection and geotagging, panorama and burst mode for best picture choice, 1,080-pixel HD video, and 120 frames-per-second slow motion. The four-inch retina display has a resolution of 1,136 × 640. An improved Siri system has Wikipedia inline Web and photo searches. www.apple.com

Galaxy Gear

The rumors were that just about everybody was working on a computer you would wear as a wristband. If those rumors were true, then Samsung beat them all to market. The Galaxy Gear, according to Samsung, “frees users from the need to constantly check their smart devices while maintaining connections...allowing users to choose how, why, when, and where they are connected.”

The device keeps you connected to all of your Galaxy devices, notifying you of incoming calls, texts, e-mails, and alerts. It displays a preview of the mes-

sage and gives you the choice to view or ignore it. Or you can immediately switch to the specific Galaxy device you received the message on by using the Smart Relay feature.

A built-in speaker lets you make hands-free calls, and S Voice enables you to draft messages, create new calendar entries, set alarms, and check the



weather. Voice Memo captures spoken memos and transfers them to your Samsung Galaxy devices as texts. Memographer transfers photos or video captured on the Gear’s 1.9-megapixel camera. As a watch, the Gear has several face options for style preferences—10 clock options are preloaded, and more are available in the Samsung Apps Store.

The Gear is available in six

Creative Destruction— Through a Lens

By Michael Castelluccio, Editor

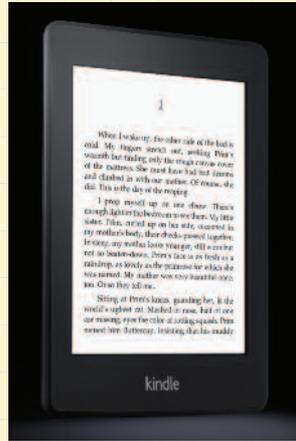
Disruptive new technologies are rarely incremental in their impact. They can spin things completely around or even bury them. Ask the employees at Kodak, one of America's legendary companies and the long-time manufacturer and manager of American photography. The 125-year-old institution was tipped over by digital photography—technology that captured images in files rather than on film—and is only just beginning to crawl out from under the remains of its collapse. It will emerge from Chapter 11 bankruptcy this year, limiting itself to commercial printing and imagery as well as touch sensor solutions.

Ironically, the first recorded attempt to build a digital camera was in Rochester, N.Y., in 1975 by an Eastman Kodak engineer named Steven Sasson. At that time, Kodak had an almost 90% share of all photographic film sales in the United States. Yet even though the movement from the silver particles of film to digital began in its labs, Kodak stuck with its legacy business model, which was eventually picked up and dropped on its head by digital.

To appreciate just how far digital imaging has carried us from the world of roll film and paper to phones and the cloud, let's revisit 1975, when film was the medium and there were no files—just negatives, slides, and prints.

1975

If you were an amateur photographer in 1975, your camera was likely a 35mm SLR (single-lens reflex) or a rangefinder. Both were heavy enough to require a wide canvas or leather neck strap. The basic difference between the cameras was how you looked through them. With an SLR, you saw through the lens via a tilted mirror, while the rangefinder had a window that provided a parallel view of what the lens saw. The SLR had a focus ring on the lens that could be twisted to make the fuzzy image sharp, or you could line up two *continued on next page*



colors: jet black, mocha gray, wild orange, oatmeal beige, rose gold, and lime green. It features an 800 MHz processor, a 1.63" Super AMOLED (320 × 320) display, 512MB of RAM, and 4GB internal memory. It has an accelerometer and a gyroscope, Bluetooth v. 4.0, and a standard Li-ion 315 mAh battery. The pedometer, stopwatch, and timer work with the MyFitnessPal and RunKeeper apps.

www.samsung.com

Kindle Paperwhite

The latest version of Amazon's e-ink e-reader includes a number of significant improvements that will likely ensure a continuing hold on the best-selling accolade. Tablets are still generally limited to indoor or low-light situations. The latest sixth generation Kindle Paperwhite has the reflected-light e-ink surface that most closely imitates paper pages, but it also has a built-in light for reading in low-light situations.

Other improvements include a 25% faster processor so books open and pages turn even more quickly than before. An improved touch screen has a

19% tighter grid for a better touch-response, allowing for a lighter touch to turn the pages. A new page flip lets you go to another page while simultaneously remaining on the page you were reading so that you can skim, scan by chapter, or check an earlier reference. A new Free Time function encourages kids to spend more time reading and tracks their reading time, vocabulary look-ups, and gives achievement badges when they reach milestones.

Look-ups have been enhanced with an improved Vocabulary Builder. The Goodreads e-reading community is now integrated on the Kindle. The battery life is still amazing—eight weeks of reading on a charge—and you can carry a library of more than 1,000 books on a device that weighs 7.3 oz. and measures 6.7" × 4.6" × 0.36". You can purchase books instantly over Wi-Fi networks or free over AT&T hotspots. You also can borrow books from your public library. The basic Wi-Fi version is \$119.

www.amazon.com

separated images into one with the rangefinder.

Film, typically 35mm, was available in color or black-and-white for prints or color slides. You bought it in either 24- or 36-frame rolls. Once loaded, you shot the whole roll before moving onto the next one. The films were available in different speeds, so you had to commit ahead of time to either low-light film that would produce grainier images or the slower, high-resolution films for brighter light or flash situations. Remember those old photographs of professionals with three or more cameras hanging around their necks—each camera probably had film with a different speed.

You could buy a fixed-focus camera with an automatic aperture, but most people chose flexibility by using cameras that had built-in light meters and the choice of shutter speeds for different situations. You would adjust the F-stop (lens opening) and shutter speed before focusing each picture. And even then, you wouldn't know how the photo had come out for days, a week, or more! Or you could develop your own film and print the negatives, which many people did. Even the smallest camera stores carried chemicals and equipment for creating your prints on the same day you shot them. You could outfit a home darkroom with a basic Vivitar, Omega, or Durst enlarger, trays, chemicals, paper, and other supplies for less than \$100.

The process involved an interesting reversal. Instead of a camera that registered lighted images it saw through a lens, the darkroom enlarger projected light through the negative and lens onto photographic paper in an easel below. You did this in a darkened room (or closet), with only a small amber-filtered safelight that produced a frequency of light the paper was blind to. Three trays of chemicals sat alongside the enlarger, each with an unpleasant smelling mixture that you prepared from concentrates at very specific temperatures. A timer stood nearby to measure the exposure of the paper to the enlarger's lighted negative, and a magnifier let you focus the grains of the projected image before you put a sheet of paper in the easel below.

Developing black-and-white photos was a step-by-step process. (Color photos were more complex and involved very finicky tolerances.) The first step to developing a black-and-white print was to put the paper in a developer bath. You could watch the image appear on the paper while poking it with rubber-tipped tongs. Then you transferred it to an acetic acid bath. It would only be in there for a few seconds before you transferred it to the fixative tray. It would be in the tray for a few minutes as the fix stopped the development, and then it went into a tub for a half-hour wash in

circulating water. The final step was to pin it up on a line to air dry.

This process was pretty complicated, moderately time consuming, and definitely accompanied by a moderate learning curve.

TODAY

Now consider the camera you reach for these days when the first snow starts falling or one of the kids does something cute. Your phone, right? Do you need to load the right kind of film, check the F-stop, or even focus the thing? No. And the time lag between touching the shutter and seeing the photo? That's about 0.5 seconds. And then sending a copy to the aunts and uncles via e-mail or posting it on Facebook? Two minutes, maybe. And where was the camera when you needed it? In your pocket? Is it any wonder that Kodachrome and the family SLR just couldn't compete in this segment of the market?

Consider the camera on the new iPhone 5s. It's just one of several accessories for the phone, but think about what it can do. The basic lens is a five-element, fast $f/2.2$, with a protective sapphire crystal lens cover. There's a True Tone flash that adjusts the color temperature to different conditions, and it has both autofocus and tap-to-focus. To get the best shot, you can use a burst mode that takes 10 photos per second, and then you can select the one with best exposure or focus. Actually, the camera will place a dot beneath the one it senses is best, but you have the final choice. There's a panorama mode to take wide angle photos automatically, and much more. It's no surprise that phone cameras like the iPhones are eliminating small-format digital point-and-shoot cameras.

With digital, you can shoot in black-and-white or color with just a tap of a button—or you can do both simultaneously. The color selections are available through processing apps applied later. Framing, captioning, exotic photo effects (like solarization or posterizing), conversion to line drawings, paintings, cartoons, and comic book coloring are available in the app stores for iOS and Android. What once took photo retouchers, graphic artists, and Photoshop jockeys hours is now available with a swipe and a tap. Actually, if you're into doing the work yourself, there's a lightweight version of Adobe PhotoShop Touch for \$10 that's designed for smartphone cameras and tablets.

How Kodak missed this juggernaut the first time around is still a mystery, but they're now back and contributing again. **SF**