ELECTRONIC TEXT USER GUIDE

"Restoring classical histories using the *best-available* technology"

HERITAGE HISTORY

HERITAGE CLASSICAL CURRICULUM

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ELECTRONIC READERS

The Heritage Classical Curriculum is one of the first curricula to rely primarily on electronic rather than conventional texts. It is particularly suitable for this technology for several reasons. First, it is a reading-based program that requires access to an entire library rather than an individual textbook. Second, it is composed mainly of books in the "public domain"—those published before 1923—so that compliance with copyright restrictions is not cumbersome. By relying on electronic rather than conventional texts Heritage History is able to provide a high quality and broad-ranging curriculum at a very economical price.

Electronic texts have many advantages over conventional books, and now that e-Readers are relatively inexpensive, more book lovers will be able to enjoy easy access to classics that were previously difficult to obtain. Some notable advantages of e-Books are as follows:

- **Availability:** Millions of e-Books are readily available and they can be procured easily online, often for a fraction of the price of conventional books. Older classics are especially easy to obtain and are often either very inexpensive or even free.

- **Storage:** While conventional books require lots of space to store, thousands of e-Books can be stored on a computer or e-Reader, and the cost of an e-Reader is significantly less than a quality bookshelf.

- **Security:** Conventional books are susceptible to being lost, damaged, or just worn out. E-Books never become worn, and even if an e-Reader or computer becomes lost or damaged, your library can be restored from a back-up copy.

- **Permanence:** It is only cost effective to keep conventional books *in-print* if they continue to sell well, and *out-of-print* books are frequently expensive and difficult to track down. Once an electronic version of a book is available, it is permanently accessible.

- **Searchability**: Electronic texts are easy to search, bookmark, link to, or add comments.

Why then, doesn't everyone read e-Books? Simply because many people still prefer old-fashioned hardcopies. E-Readers are now widely available, and as their prices continue to drop they will likely attract more and more book lovers, but many people, especially those born before the e-Book revolution, will always prefer printed books.

Two Solutions—Heritage History is committed to providing easy access to our outstanding library to those who prefer old-fashioned, printed books, as well as those who are comfortable with e-Reader technology. We therefore provide copies of all of our books in both printable and e-Reader formats. The Heritage **PDF** files are attractively formatted for printing rather than reading online, while our **MOBI** and **EPUB** files can be downloaded directly to any e-Reader or Tablet, or viewed on any home computer. Each Heritage History e-Book contains all three formats, so that users can freely upgrade to new technologies, print full or partial copies, or read the same book on multiple devices.

The three file formats supported by every book in the Heritage library are as follows:

- The **PDF** format (Portable Document Format) was created in 1993 by Adobe Systems to provide a standard printer interface so that documents could be reproduced identically on any printer. PDF is so well established that it is supported by all modern printers, and the Adobe Reader software is already installed on almost all home computers.

- The **MOBI** format (short for Mobile) is a commonly used electronic reader format that was introduced almost ten years ago by Mobipocket, a subsidiary of Amazon. It is supported by e-Reader devices like the Amazon Kindle.

- The **EPUB** format (short for Electronic PUBlication) is an e-Book standard format promoted by the International Digital Publishing Forum. EPUB became an official standard in September 2007. The EPUB format is supported by most newer e-Readers and Tablets.

The Electronic Text Users Guide is divided into three main sections. The first section discusses Electronic Reader technology and provides instructions for downloading books from the Heritage Compact Libraries to portable e-Reader and Tablet devices. The next section covers Self-publishing options and presents ideas for minimizing printing and binding costs for those who opt to reprint their own books. The final section discusses Copyright Restrictions on Heritage History e-Books. We hope that this information helps Heritage History users make the best possible use of our resources.

Electronic Readers—Most e-Readers are set up primarily to encourage customers to purchase books through their proprietary stores, but all have some method—sometimes well documented, sometimes not—of allowing customers to download books directly from their computers without paying any additional fees.

Most e-Readers support a method of copying files directly onto devices that are physically hooked to your computer. This method is described in the Downloading to your Kindle section. It is applicable to most e-Readers, although some newer e-Readers only support EPUB files, while Kindle prefers MOBI files. Since Heritage History provides both formats, one or the other should work on all e-Readers.

The method for downloading e-Books to an Apple iPad is somewhat different. Apple requires you to use the iTunes program to transfer EPUB files. The <u>Downloading to your Apple iPad</u> section describes this process in detail.

Downloading to your Kindle

The Heritage Compact Libraries contain dozens of MOBI e-book files on one CD that can be downloaded to your Kindle e-Reader. In order to download the files to your Kindle, you will need to insert the Heritage Compact Library CD into your computer, and then navigate to the folder where the MOBI files are stored. When you have opened this folder, you can move the e-books of interest to the Kindle device. In the following example, the book <u>Famous Men of Greece</u> is moved from a computer to a Kindle.

To access MOBI files from a Heritage Compact Library, put the CD into your computer. If you open up a Windows Explorer window and view the contents of the Compact Library, you will see folders labeled "epub", "guide", "html", "images", "maps", "pdf", and "mobi". All of the MOBI e-book files on the Compact Library are in the "mobi" folder. An example of what you should see in the Windows Explorer (Microsoft Vista) is shown in the following image.
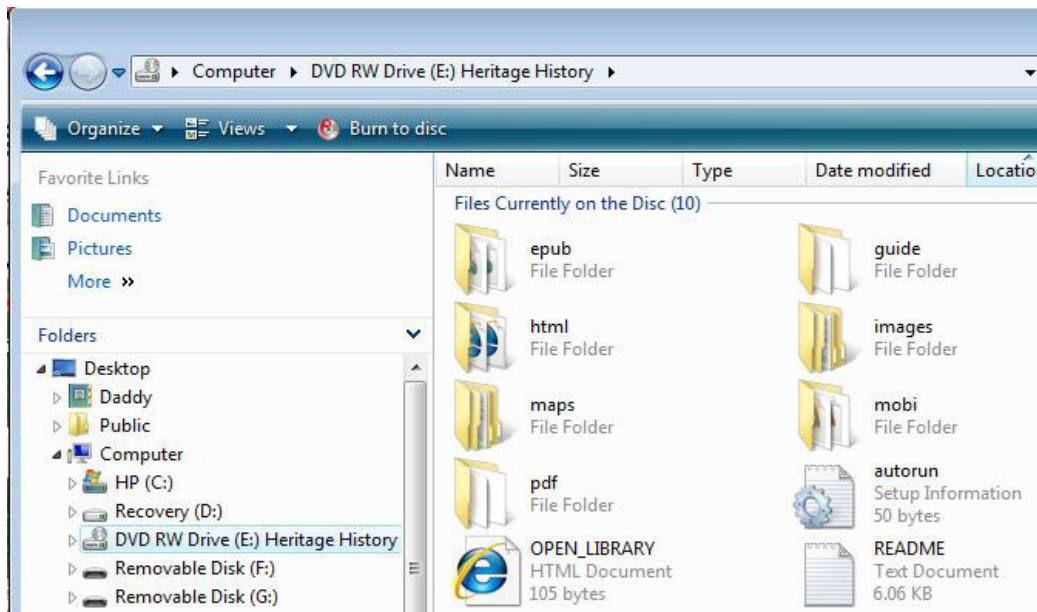
Folder listing for Heritage Classical Curriculum CD

Open the "mobi" folder to display all of the available e-books on the Compact Library Disc. The title and author are displayed in alphabetical order, making it easy to find the book you want.

The following image shows a listing of the "mobi" folder on the Compact Library.
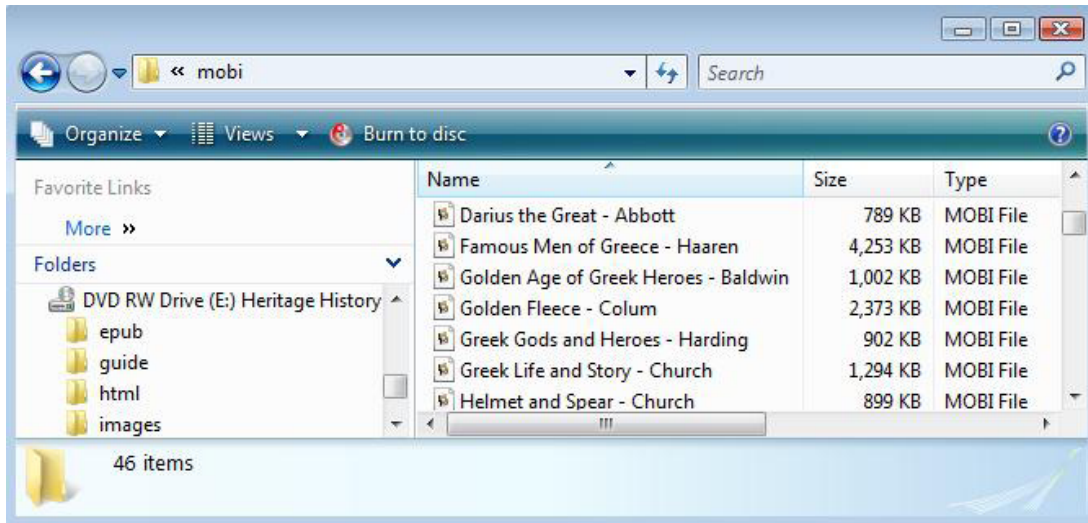

Folder listing for Heritage Classical Curriculum CD

Adding e-Books to your reading device is simple. Plug your reading device into your computer. On most Windows computers an "AutoPlay" window will appear on your screen. Select the "Open folder to view files" option. You should see something resembling the following image.

AutoPlay window appears when Kindle is connected

You are now at the top level of your Kindle system directory. You will see a folder named "documents". Select this folder in Windows Explorer to see what e-books are on your Kindle. If the AutoPlay window does not appear on your computer screen, you can use Windows Explorer to navigate to the "documents" folder on your Kindle. See image below for an example folder listing from a Kindle "documents" directory.
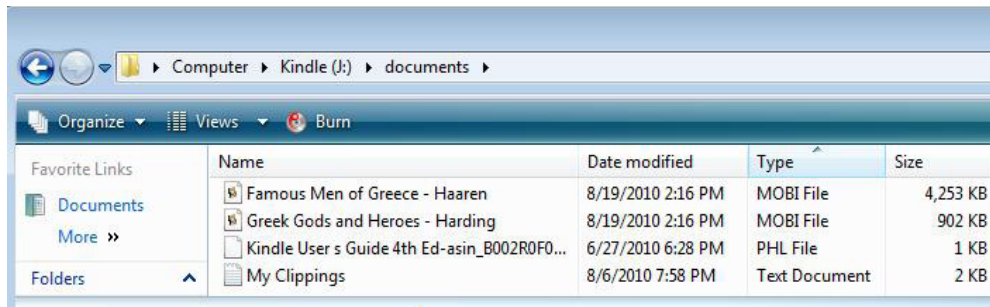
**Example listing from "documents" folder on Kindle**

Now that you have the "documents" folder open, you can simply select the e-books from the "mobi" folder on the Compact Library and move them to the Kindle "documents" folder. If you experience problems with moving MOBI files to your Kindle, please see the documentation that came with your Kindle.

Downloading to your Apple iPad

The following instructions on how to download Heritage EPUB files to your iPad assumes that iTunes is already installed on your computer and that your iPad is authorized to work with your iTunes installation. You can add one e-Book at a time to your iPad or download all of the e-Books on your Compact Library to the iPad at once. The example below demonstrates adding a single e-Book to the iPad device.

Begin with the iPad connected to the computer, then select "Add File to Library", navigate to the "epub" directory on the Compact Library, select a book of interest and then sync your iTunes library with your iPad. The following is a step by step guide with images.

With the iPad e-Reader connected to your computer, select "Add File to Library" as shown in the following image.
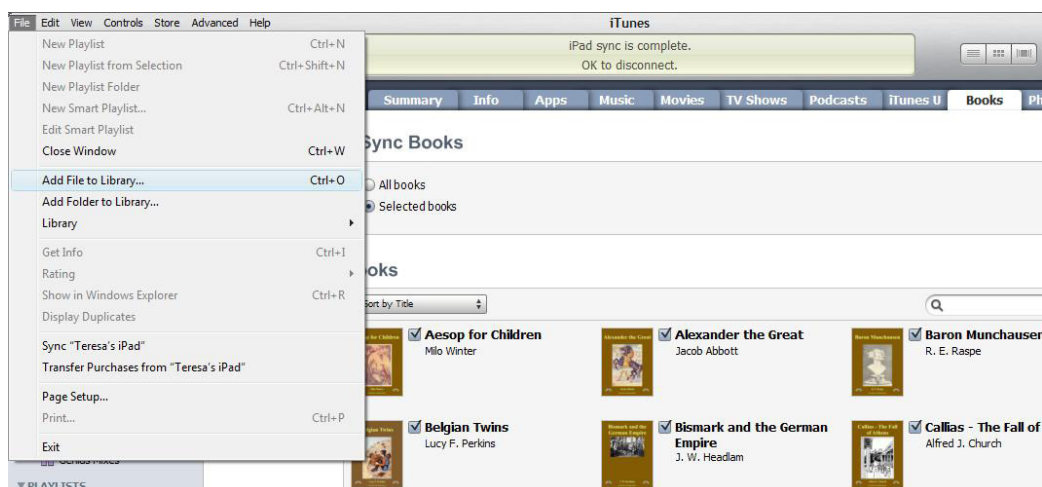
iTunes menu item "Add File to Library. . ."

Navigate to the "epub" directory on the Heritage Classical Curriculum CD and select the e-Book of interest—in this case, it's <u>Famous Men of Greece</u> by Haaren. This will add the file to your iTunes library.
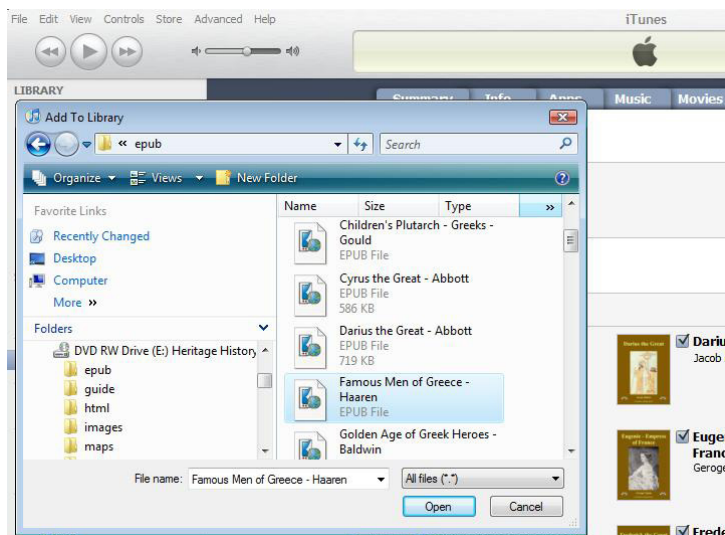
Select e-Book of interest from "epub" folder on Curriculum CD

After you have added your book to the iTunes library, you will need to sync your iTunes library with your iPad. The sync operation copies selected books from your iTunes library to your iPad. Apple's iPad and iTunes documentation can explain in detail how to manage your iTunes and iPad libraries. The following image shows iTunes syncing to the iPad.
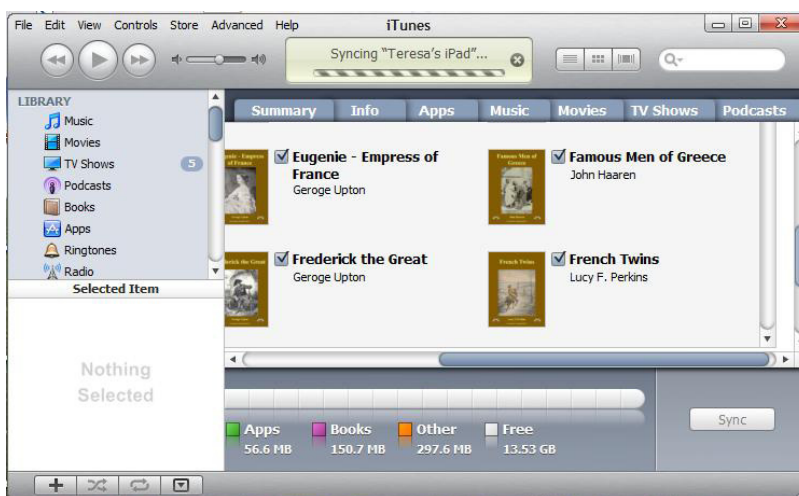
Syncing the iTunes e-book library with the iPad

ADOBE READER AND MOBIPOCKET READER

Adobe Reader and Mobipocket Reader provide two additional methods to access Heritage History e-books. The Adobe Reader is a well-established software program from Adobe that reads files in the PDF format. Portable Document Format (PDF) is an open standard for document exchange. Most computers today have the Adobe Reader program installed. Heritage History has specially formatted the e-Book PDF files so that you can easily print a book out for reading. A more detailed discussion of this can be found in the Self-Publishing section of this User Guide.

Mobipocket Reader is a software program that runs on your computer. It offers the ability to read an e-Book on your computer without purchasing any hardware. Mobipocket provides all of the features that a dedicated e-Reader has except for physical portability. This can be a cost-effective solution for someone who has a laptop but not the means to purchase a dedicated e-Reader.

Downloading the Adobe Reader—Most computers already have Adobe Reader installed on them, because PDF is a commonly used format for printable documents. If your computer does not already have Adobe Reader installed on it, the latest version of the software can be obtained by following instructions at this website:

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http://get.adobe.com/reader
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Downloading the Mobipocket Reader—The Mobipocket reader features a reflowable display that allows you to highlight, bookmark, leave comments, and even look up words. It also provides access to free news updates and offers easy organization of books. It can be downloaded for free at:

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http://www.mobipocket.com/en/DownloadSoft/default.
asp?Language=EN
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This webpage will present you with two options. You can download the Mobipocket Reader or the Mobipocket Creator. The creator program is used to create your own e-books. Instead, choose the reader program. This will take you to the reader web page. Press the download button on the right-hand side of the screen. Follow the prompts to install Mobipocket reader on your computer.

Accessing Printable PDF e-Books from the Compact Library—Assuming Adobe Reader has been installed on your computer, you can now open a book by clicking on a book link in the Compact Library. The following image shows an isolated view of a book list from the Ancient Greece Classical Curriculum. In this example if we wish to read Famous Men of Greece, we simply click on the book link and the book will open with the Adobe Acrobat reader.

Click on "Famous Men of Greece" to open PDF in Acrobat

The following image shows the e-Book Famous Men of Greece opened inside a Windows Internet Explorer window with the Adobe Reader application.
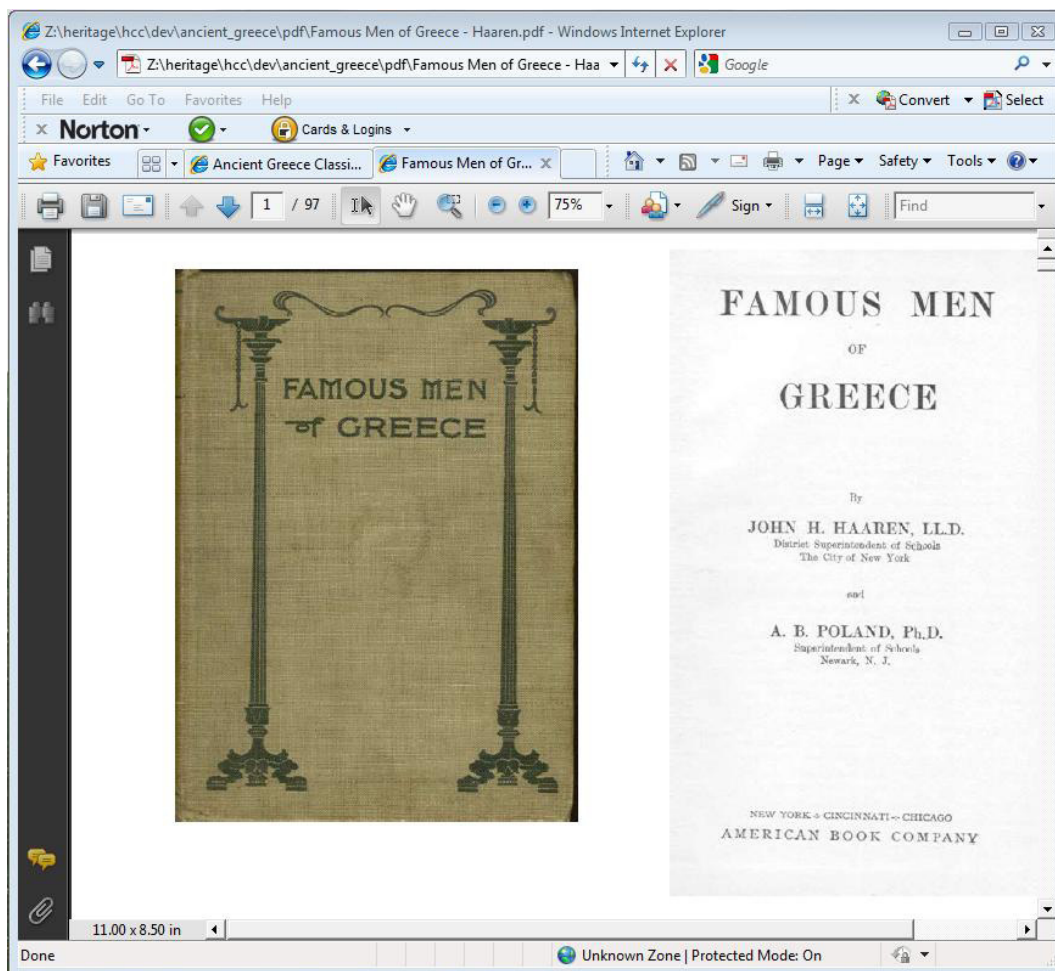
"Famous Men of Greece" Display in Adobe Reader

Accessing MOBI files from the Compact Library— Assuming Mobipocket Reader has been installed on your computer, you can now open a book by clicking on a book link in the Compact Library. The following image shows an isolated view of the book list. In this example if we wish to read Famous Men of Greece, we simply click on the MOBI link. The e-Book should then open with the Mobipocket Reader program.

Click on "MOBI" to open in Mobipocket Reader

After selecting the link there might be a couple of typical Microsoft Window warning messages about opening or saving the file; select "open". Since the file is being opened from a web page Windows might ask if you really want a "Web Application" to open the file; select "allow". The following image shows the results of opening Famous Men of Greece into the Mobipocket Reader.
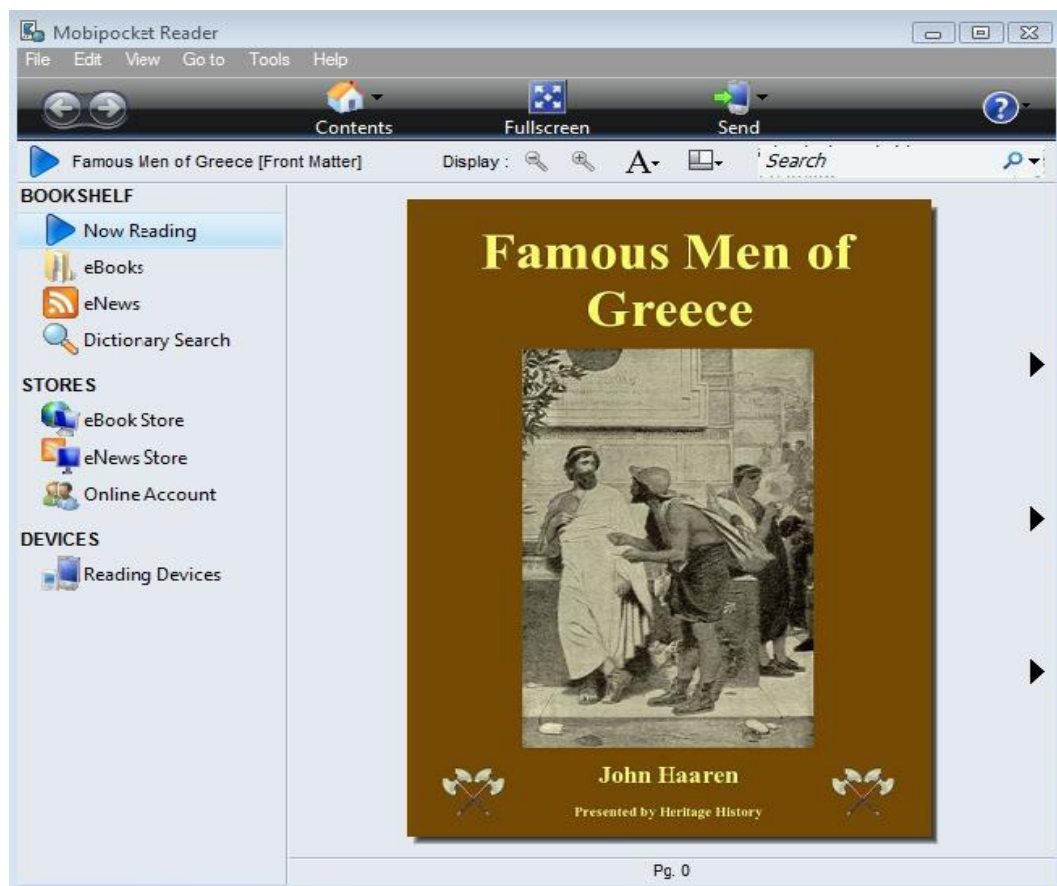
Mobipocket Reader

Time to Buy an E-reader?

E-books provide a convenient and low-cost way to enjoy classical history and literature, but they cannot be used without computers and electronic readers (e-Readers). Because electronic readers are still relatively new the technology is changing rapidly and it is difficult to keep up with the latest developments.

Until recently, only a few e-Readers were available; now there are dozens of vendors, models and features to choose from. Selecting the e-Reader or Tablet that is right for your family can be difficult. Here we provide an overview of some of the major features and give our take on the importance of each. We have tried to keep this information general, since the technology is changing so rapidly that specific products are constantly superseded.

E-Readers are used primarily for reading electronic books or magazines and support few other functions. They usually have black and white screens, are lightweight, and have a very long battery life (up to a month). They are much less expensive than Tablets, with low-end models beginning around $100.

The most popular e-Readers are Amazon's Kindle and Barnes and Noble's Nook. Both are marketed by bookstores which stand to make more money off the purchase of electronic books than they do by selling the device itself. However, there are several other vendors in the market, and electronic books can be purchased from many other sources, so you do not need to purchase an e-Reader associated with a particular bookstore.

Tablets are more complex than e-Readers and operate much like a small laptop. They have more complicated user interfaces than most e-Readers, but they are easy to use because they appear to operate like a computer. Most Tablets have a touch screen with a color LCD, an internet browser, and the ability to run a variety of applications. They can be used to read books or email, browse the internet, watch videos, or play games, but they are difficult to use for major writing projects, editing, or content creation. Battery life (up to 24 hours) is not nearly as long as an e-Reader, but somewhat longer than a laptop.

There are a great many Tablets now available on the market. The Apple iPad has been dominant up until now, but lower cost versions are being introduced by many different providers. Tablets are not captive to any particular bookstore and allow you to purchase books from any online store or upload electronic books directly from your computer. The purchase cost of Tablets, however, is significantly higher than for e-Readers.

Screen Technology—The cost, battery life, and user interface of electronic readers and Tablets are determined primarily by their screen technology.

- **E-Ink screens** mimic printed paper and are non-reflective so they provide excellent contrast in daylight and bright light environments. Reading in low light is a problem, just as it is when reading a regular book, so portable book lamps are a popular option with e-Ink devices. E-Ink screens consume very little power so the battery life is

extremely long—up to a month in some cases. Page refresh is too slow for game and video applications, but is adequate for reading a book.

- **Color LCD screens** are commonly used for Tablet devices. While the color display is visually appealing and essential for games and video applications, it is not necessary for reading an e-Book and sometimes harmful. Some people are troubled with eye fatigue due to long term exposure to backlighting and prefer e-Ink screens for reading.

- **Touch Screen** displays make it easy to navigate and control the operation of the device. They allow for an intuitive and easy-to-learn user interface. In the past, touch screen technology only worked with LCD displays but now they have been adapted to work with e-Ink displays.

- **Screen Size** on most devices varies from five inches to around ten inches. In addition to costing more, e-Readers with larger screens have shorter battery lives and are heavier, so the trade-off between screen size and portability is straight-forward.

CONNECTIVITY OPTIONS—Data must have a way to get on and off your reading device. Tablets and E-readers are too small to have CD drives, but they all support USB (Universal Serial Bus) inputs. In addition, most support some form of wireless data transfer. The connectivity options supported by most e-Readers are as follows:

- **USB** Universal Serial Bus connectivity is supported by all electronic devices. The same USB cable that allows you to recharge your battery can also be used to download e-Books from your computer directly to your e-Reader. *A USB port is the only connection required to upload Heritage History e-Books*, and directions for uploading Heritage books to your e-Reader or Tablet are provided on page 8.

- **Wi-Fi** is provided on most e-Readers, and all Tablets. Wi-Fi allows you to make a wireless connection from a *local* home or public network directly to your reading device. Since Tablets have computer-like operating systems, they are easily adapted to local area Wi-Fi networks. E-Readers have more limited functions, but many allow you to download content from the Internet when you are in the vicinity of a Wi-Fi network.

- **3G** is shorthand for the 3rd generation mobile telecommunications protocol that allows your device to connect to a cellular wireless network. Cellular networks cover vast areas rather than local operations, so they can be used anywhere that a typical cellphone gets reception. Most e-Readers provide limited 3G access for uploading books from e-Book stores, but do not support high bandwidth applications. Tablets, on the other hand, typically support applications (such as uploading games or movies from the Internet) that make high bandwidth demands on the wireless network, so 3G is an optional feature and significantly increases the cost of the device. Tablet users who are usually within the range of Wi-Fi may not need access to 3G service.

Audio Options—Audio books are very popular with a great many people and one of the selling points of electronic readers is that most support some form of audio. Most e-Readers support both Text-to-Voice and Audio Books, but it is important to understand the difference between them.

- **Text-to-Voice** is a software program that will read *any* electronic text file using a particular "voice". Each individual voice used by a text-to-voice program has an entire dictionary of prerecorded words and phrases which help the voice sound much more realistic. The more pre-recorded words in a text-to-voice dictionary, the more natural the translation, so low-end applications usually make only one or two voices available. Text-to-voice software can guess the pronunciation of words that it doesn't recognize, but they often sound mechanical.

- **Audio Books** are created by recording a live human reading an actual book. Their quality is much higher than that of a text-to-voice program. A good reader often brings drama, humor, and personality to the reading of a book that an automated program cannot possibly provide.

There is no question that quality-wise, audio books are superior to automated versions. Unfortunately, there are some major disadvantages. Well-done audio books are difficult to make, and are therefore relatively expensive. More importantly, most books are simply unavailable as audio books. The Heritage History library, for example, has over 400 electronic books, each of which can be downloaded for less than $2. Of these four hundred books, only about a few dozen are currently available as audio books, and most are fairly expensive. Text-to-voice applications, on the other hand, can read any book at all in the Heritage library for no additional cost.

The good news is, almost all electronic readers provide a fairly high quality text-to-voice application as a standard feature, and in many cases this is sufficient.

Our Recommendations—The decision of whether to purchase a Tablet or an e-Reader is a personal one, but since we own a selection of both and are veteran homeschoolers with numerous children, our own experience may be instructive.

First of all, the issue of whether or not our students would enjoy reading from electronic readers as much as from "real books" was very quickly put to rest. Far from preferring "real books", our children, who have spent their whole lives surrounded by delightful classics and have been discouraged from over-doing video entertainment of any kind, surrendered all loyalty to old-fashioned ink and paper in moments.

In terms of user interface, our students prefer the Tablet to e-Ink style e-Readers. They enjoy the colorful touchscreen, whiz-bang user-interface, and fun applications. When both styles are available, the Tablet is the invariable first choice.

Nevertheless, as dutiful wet-blanket parents, for serious reading we prefer the prosaic, single-purpose electronic readers for precisely the same reasons they prefer the Tablet; that is, because they lack fun applications. The problem we have with Tablets is that because they are

so fun to play with, students are likely to be distracted from serious reading. Students may be tempted to play "Angry Birds", log onto Facebook, or check sport scores instead of reading Plutarch, and this is less of a temptation with regular e-Readers.

A secondary problem we have with Tablets is that they are almost as expensive as laptops, but are not as useful for actually creating complex content. They are excellent for viewing information, but not useful for serious writing, editing, or design. At this time, a tablet does not have the functionality to replace a laptop. In the future, however, it is likely that laptops and Tablets will tend to merge, as Tablets become more functional and laptops become lighter. It is also likely that e-Readers will provide a broader range of computer-like functions, so the distinctions we now see between the three devices are probably destined to become less distinct.

DIGITAL RIGHTS MANAGEMENT

Most e-Books and e-Readers support a mechanism to protect copyrighted material. There are various methods of protecting digital material, but all are typically labeled with the generic term "Digital Rights Management" or DRM for short. Most e-books purchased from e-Book vendors such as Amazon have some form of DRM. Purchasing an e-Book with DRM prevents the purchaser from reselling or redistributing the e-Book. Some forms of DRM can even prevent e-Books from being read on multiple e-Readers or computers at the same time. The protection mechanism attempts to mimic the realities of owning a single copy of a book. While there are some redeeming points to DRM material, such as protection for the publisher and author, DRM schemes tend to be cumbersome for the end user.

Another problem with DRM schemes is that when you purchase a "protected" e-Book and download it to a specific technology, such as Kindle, the DRM rights will not necessarily transfer to future technology. Successive generations of e-Readers sold by a particular company will undoubtedly be upgradeable, but there is no guarantee that if in five years' time you transfer to a completely different technology you will still be able to use your e-Books.

Because of these problems, Heritage History has elected to provide e-Books without a DRM scheme applied. This allows our customers to easily move their purchased materials from one device to another without worrying about licensing issues. Heritage users don't need to worry that changing technology will obsolete their book collection, or that their collection of books will be lost if their e-Reader is lost, or that software problems might corrupt their files. They can keep as many backup files as they desire, and have the security of knowing their library will be never be lost or corrupted.

Heritage History trusts its customers to respect our copyrights and to make prudent decisions, bearing in mind that our copyright limitations restrict our customers to copying Heritage files for personal and educational uses only. More information about the copyright restrictions on Heritage e-Books is included in the final division of this User Guide.

Self-Publishing E-Books

For those who would like to print copies of their own books, Heritage History provides print-ready PDF files that have been carefully formatted to attractively reproduce our classical history books on any home or office printer.

Our landscape, two-column format was designed to appear to the reader in a form similar to an open 5 × 8" paperback book. We selected this format because when open flat, it has the look and feel of a traditional printed book, but in some ways it is even more practical. A Heritage book that is spiral, comb, or ring-bound can be opened 360 degrees and stored flat. As long as stiff front and backing are used when binding, self-published books are just as sturdy as traditional paperbacks and are less likely to bend out of shape. There is no need to dog-ear them since they can simply be left open at the location one is reading, and they are just as portable as a regular paperback.

While e-readers can be used to read copyrighted material, the option of printing your own books is possible only for books—such as those in the Heritage History library—that are in the public domain. Copyright laws prohibit reproducing protected materials, even for personal use, so self-publishing is not a frequently discussed option. However, it is inexpensive and appropriate for homeschooling families, professional educators, or anyone who appreciates non-fiction and literature classics.

The logistics of self-publishing your own books—that is, printing an efficiently formatted copy of an electronic book on a home printer and binding it yourself—is extremely simple. The difficulty is not in the procedure itself, but rather in making sure you are working with the right equipment. Heritage print-ready books can be reproduced on any printer, but the practical cost can range from about half a cent to 4 cents per page, and the cost of binding from about a dollar to four dollars per book.

In order to help Heritage users decide whether or not printing their own books is practical, the next few sections discuss the advantages of high performance printers, provide tips for savings on ink purchases, and present binding options. The key to practical, low-cost home publishing is in securing the right equipment. Once an initial investment is made, self-publishing can be fast, easy, and very inexpensive.

Time to Upgrade to a Laser Printer?

Many people who use the Heritage History website or Compact Libraries would like to self-publish some of their favorite books, but hesitate to do so because their printers are too slow and inefficient for large printing jobs.

If your printer is not up to the task of printing fifty to sixty pages of text quickly and inexpensively, it may be time for an upgrade. As recently as two years ago, a typical office-quality laser printer cost over $300, but today, high-yield printers can be purchased for only a little over $100. Laser printers will never be as inexpensive as the simplest desk-top models, but for anyone who prints more than a few dozen pages a month, they will certainly be more economical in the long run.

There are two types of home-printers: Ink jet, and laser printers. For a long time, ink jet printers have dominated the home-market because of their very low purchase cost. Laser printers, on the other hand, have traditionally been the printer of choice for office applications, since they are much faster and have far lower operating costs. But the distinct qualities that separate the two technologies are now starting to blur. Low end laser printers have dropped considerably in price and the performance of some high end ink jets have improved considerably. It is therefore worthwhile to look more closely at current printer option to see if it makes sense to upgrade.

Ink jet printers can be inexpensive to purchase, but they sometimes cost as much as 3 to 4 cents per page to operate. It is not uncommon for a family to spend more in ink costs during a year than they spent for the printer in the first place. Ink-jets always have small ink cartridges, since the cartridges must be mounted on a rod and move across the page to deposit individual drops. The advantages of ink-jets are that they are small, inexpensive to purchase, and they print in color as well as black and white. The disadvantages are that most ink jet printers are slow, their ink cartridges last for only a few hundred pages, and the per-page ink costs are relatively high.

Laser printers work in an entirely different way. Instead of relying on a printing mechanism that slides back and forth, laser printers deposit ink on the entire width of the paper all at once. They are therefore usually faster than ink jets—printing speeds are usually above 30 ppm. More importantly, they use large, high-volume ink cartridges that typically print 3000 to 6000 pages before needing to be refilled. The advantages of laser printers are high speed and low operating cost. Color laser printers do exist, but they are prohibitively expensive for general home use.

In the last few years the differences in performance between high end ink jets and low end lasers have become less stark, so some newer ink jets may be up to the task of high volume printing. In general, however, laser printers are faster and more economical than ink jets. But ink jets still have the advantage in terms of color printing, so even if you do upgrade to a laser printer for black and white printing, you may want to keep your ink jet for color prints.

OPTIONS—Laser printers vary in terms of design, speed and yield (pages per cartridge), but there are not as many complicated options as there are for ink jet printers. The printing mechanism for laser printers is so much larger than for ink-jets that most "printer/copier" or "all-in-one" units use ink-jet rather than laser technology. The following laser printer options, however, are worthy of note. They will tend to increase the purchase price, but may be worth the extra cost.

Auto-Duplex: Auto-duplex provides for the ability to do automatic two-sided copying. The duplex feature does slow down the printing process considerably (~6 ppm. instead of ~30 ppm.), but it saves on paper and binding costs over time. It has only been available on low-end laser printers for a few years, but it saves a considerable amount of paper, makes binding easier, and produces very attractive books.

Network Ready: The Network ready feature allows the printer to be mounted in a way that it can be accessed from any computer on a local network, rather than being tied to one particular computer. If you do all your printing from a single computer, you do not need this feature, but if you have a home network with multiple computers, it may be worth the extra cost.

LOWERING PRINTING COSTS…

It is important to understand that the per-page cost of home publishing depends more on the cost of ink cartridges than it does on the purchase price of the printer. The problem is that the per-page cost of ink cartridges is often not taken into consideration at the time printers are first purchased. It would be convenient if venders would publish this information so consumers could compare printers on a one-for-one basis, but they make more money from ignorant customers than informed ones. It is up to you, therefore, to understand the basics of ink cartridge pricing before purchasing a new printer.

Relative size of typical laser printer cartridges vs. ink jet cartridges

The following is a list of things you should know about ink cartridges whether or not you decide to purchase a new laser printer. One could argue that minimizing ink costs is even more important with an ink-jet than a laser printer because the operating cost of an ink jet is usually significantly higher.

- More often than not, you will save more money by focusing on cartridge costs than you will by trying to minimize your purchase cost. When considering a particular printer, *make a note of the cartridge number* and research ink costs before you make a purchase.

- The business model for many printer companies is to sell printers cheaply—even below cost—in hopes of making high profits on custom ink cartridges. It is no accident that printer costs are low relative to cartridge costs.

- A large third-party ink-cartridge market exists because of the inflated list price of the manufacturer's cartridges. The discount price of refilled ink-cartridges is often *less than half* the manufacturer's list price.

- Well established printers with large installed bases have the cheapest ink prices. Newly released printers frequently have the highest ink costs. The cost of most refillable ink cartridges will decline over time.

To find the real cost-per-page of an established printer model, simply type the cartridge number into Google, and you will likely see about half-a-dozen ink-suppliers willing to sell the ink-cartridge for a fraction of the manufacturer's suggestion retail price. The third-party price of ink cartridges divided by the yield of the cartridge (the number of pages can print) determines the per-page cost of operation.

BINDING OPTIONS

There are four ways to bind self-published books.

From top to bottom: Comb binding, spiral binding, thermal binding, ring binding

Ring Binding—The cheapest and easiest method of binding one's own books is to stick with fail-safe three-ring binding. Almost every home has a three-hole punch available, and to make the job even easier, pre-punched three-hole paper is available. Books printed on three-hole-punched paper can be bound in a small three ring notebook, in a report folder, or with a simple, reusable set of binding rings. We favor the use of binding rings because they are inexpensive and it is very convenient to be able to open the book up 360 degrees.

The major advantage of three-ring binding is that it is simple and inexpensive. The only disadvantage relative to spiral or comb bound books is that ring-bound books are not quite as sturdy as other binding options. Stiff front and back covers are essential when ring binding, but even with high quality covers, a typical 100 sheet book can be printed and bound for less than $2.00.

Comb Binding—A simple comb binder can be purchased for less than $60, and binding supplies are inexpensive and widely available. Comb-binding can be done at home with attractive results. If one punches one's own paper, the per-book cost of comb-binding is just as inexpensive as ring binding. However, only 8 to 10 pages can be punched at a time, so for some people the convenience of pre-punched comb-binding paper (which costs about 2x that of regular paper) may be worth the cost.
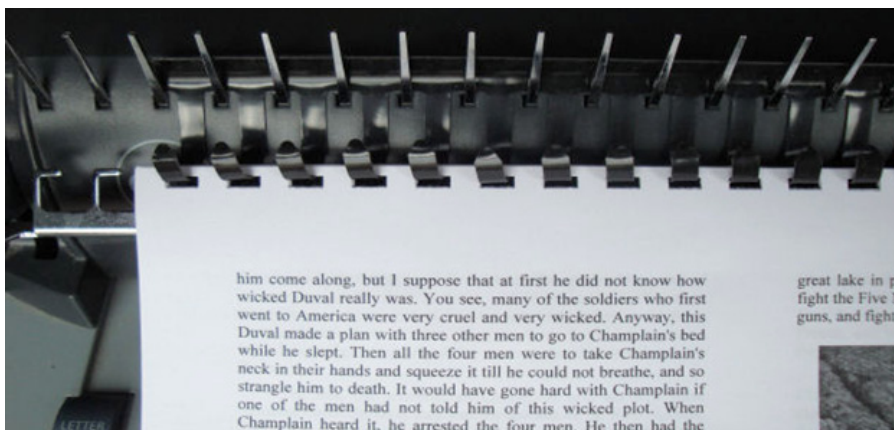
Whether one punches one's own holes or uses pre-punched paper, a comb-binder is necessary to hold open the comb while the punched paper is inserted. The finished product is attractive and compact. The total cost of printing and binding a comb-bound 100-sheet book will be less than $3.00 even if pre-punched paper is used.

Spiral binding—Professional spiral binding is more expensive than either comb or ring binding because in most cases one must rely on a print-shop. Spiral binding equipment is considerably more expensive than comb-binding, and is out of the realm of possibility for most home-publishers. The typical cost for professionally spiral binding a book, assuming you print the book yourself, will likely be between $2 and $4 dollars. Add at least a dollar for home-printing costs and the total outlay for a professionally bound spiral bound book is between $3.50 and $5.00.

On the positive side, spiral binding is probably the most attractive method of binding self-published books. Spiral bound books can be opened up 360 degrees and are pleasing to read and handle. They can be bound along either the long or short side of the page, and are sturdier than either ring-bound or comb-bound books.

If you intend to spiral bind more than a few books, we recommend purchasing a supply of clear-front covers and stiff board backing so that you don't pay the marked-up price when you have your book professionally bound. These materials are relatively inexpensive in packets of 20 or more, but can add dollars to the cost of publishing if they are purchased individually.

Another way to save money if you choose to spiral bind books is to combine several smaller books and bind them together. Many of our books, particularly those intended for young and intermediate readers, are only 40 to 80 sheets, and two or more such books could easily be bound together.

Thermal Binding—Thermal binding is becoming cheaper and more readily available. Also known as "cover-binding" or "perfect-binding," this is the same method used to bind regular paper-back books. It is a long established method of binding, but only in the last few years has single-volume, desktop thermal binding become commonplace. Most office-services stores now provide this option for only a slightly greater cost than spiral binding.

Thermal binding requires the purchase of a pre-made cover, which typically costs $1-3 and includes an adhesive strip. The printer binds your book by placing your sheets of paper in the center of the strip and heating the adhesive while applying pressure.

A desktop thermal binder costs little more than a comb binder, but the great difficulty with home-based thermal binding is that each book requires its own cover, and thermal-binding covers are *not* one-size-fits-all. In other words, one would have to purchase a range of covers in various sizes in order to print books of differing lengths.

One advantage to thermal binding is that it does not require pre-punched paper. Another is that it produces books with a familiar look and feel. One disadvantage of thermal binding is that it has a relatively high per book cost unless the binding covers are bought in bulk. Another disadvantage is that, unlike the other binding options discussed here, it does not allow the book to be open 360 degrees. Given that books published in our landscape 2 column format are double the size of a regular paperback, it is convenient to be able to fold them at the binding.

No matter what binding method you choose, we strongly recommend purchasing clear front covers and hard backings. If purchased in bulk they only add 40 to 80 cents to the cost of a book and they make the final product more durable and attractive. If durability is really an issue, printing the entire book on slightly heavier than usual bond paper will produce a very sturdy product.

In order to support home publishers, we provide links to binding supplies as well as laser printers at our Heritage History Store Front. See our website at www.heritage-history.com for more details.

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