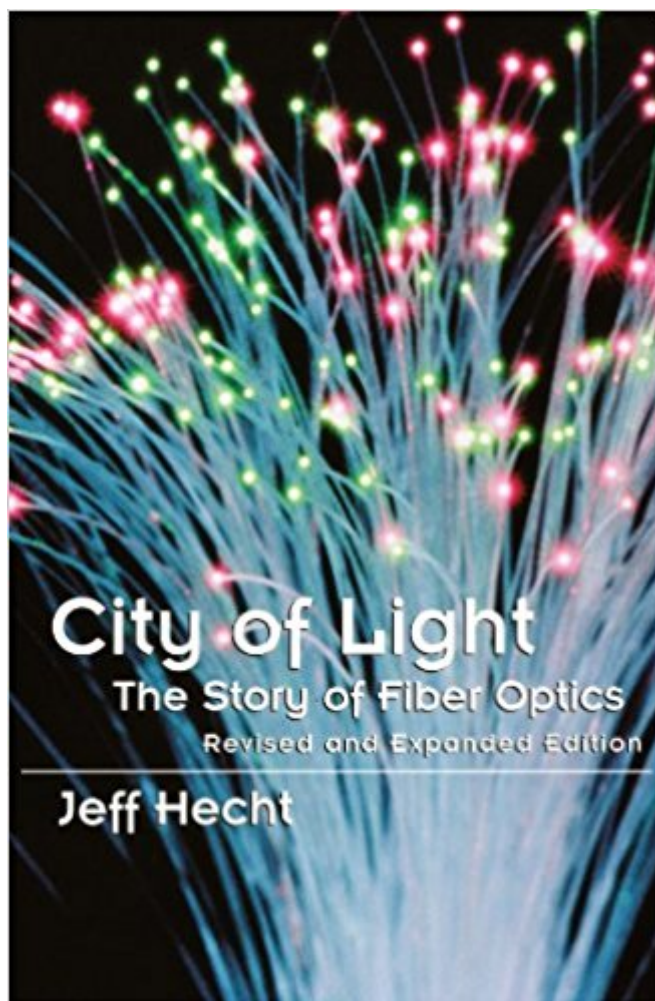


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City Of Light: The Story Of Fiber Optics (Sloan Technology)



Synopsis

City of Light tells the story of fiber optics, tracing its transformation from 19th-century parlor trick into the foundation of our global communications network. Written for a broad audience by a journalist who has covered the field for twenty years, the book is a lively account of both the people and the ideas behind this revolutionary technology. The basic concept underlying fiber optics was first explored in the 1840s when researchers used jets of water to guide light in laboratory demonstrations. The idea caught the public eye decades later when it was used to create stunning illuminated fountains at many of the great Victorian exhibitions. The modern version of fiber optics--using flexible glass fibers to transmit light--was discovered independently five times through the first half of the century, and one of its first key applications was the endoscope, which for the first time allowed physicians to look inside the body without surgery. Endoscopes became practical in 1956 when a college undergraduate discovered how to make solid glass fibers with a glass cladding. With the invention of the laser, researchers grew interested in optical communications. While Bell Labs and others tried to send laser beams through the atmosphere or hollow light pipes, a small group at Standard Telecommunication Laboratories looked at guiding light by transparent fibers. Led by the recipient of the 2009 Nobel Prize in Physics, Charles K. Kao, they proposed the idea of fiber-optic communications and demonstrated that contrary to what many researchers thought glass could be made clear enough to transmit light over great distances. Following these ideas, Corning Glass Works developed the first low-loss glass fibers in 1970. From this point fiber-optic communications developed rapidly. The first experimental phone links were tested on live telephone traffic in 1977 and within half a dozen years long-distance companies were laying fiber cables for their national backbone systems. In 1988, the first transatlantic fiber-optic cable connected Europe with North America, and now fiber optics are the key element in global communications. The story continues today as fiber optics spread through the communication grid that connects homes and offices, creating huge information pipelines and replacing copper wires. The book concludes with a look at some of the exciting potential developments of this technology.

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Customer Reviews

Computers you notice. They sit on your desk and hum, ever smaller, ever faster, and always obsolete if bought longer ago than last week. But the equally impressive technology that turns millions of terminals into a global network is less obvious. The phone line that comes into your house probably still pushes electrons through metal. But not far away, the signal will join millions of others relayed down fiber optic cables by laser. Jeff Hecht's fascinating account of this undersung technology goes back 150 years to find the origins of fiber optics. Then he chronicles the many ingenious and determined engineers who fashioned it into a technology that festoons the globe with cables carrying pulses of photons. It was harder than pioneering copper links because supplanting an existing technology needs more persuasion than establishing the first one. And there was competition from the satellite industry, as well as unexpected setbacks, such as sharks who ignored copper but chewed fiber optic cables. Hecht tells a good tale, combining a light journalistic touch with a scholarly knowledge of the industry he has covered for over two decades. The story is not over yet, but this is a rich account of how we got this far in a technology that really has fueled a revolution. --Jon Turney, .co.uk --This text refers to the Hardcover edition.

The first underwater telegraph cable was laid between England and the Continent in 1850, with the cable from America to Europe following in 1858. But for the next century, improvements in transcontinental communication came slowly. By the 1940s, Americans could talk to Europeans via a static-plagued radiophone. By the early 1980s, satellite transmissions had improved conversation clarity significantly, but callers were still annoyed by delay and feedback. Those who have made a transcontinental call recently, however, know that the wonders of fiber optics have made it possible to hear a pin drop on the Champs-Élysées. In this deft history, Hecht, a writer for the British weekly *New Scientist*, shows how the illuminated fountains that thrilled crowds at the great 19th-century

exhibitions convinced scientists that light can be guided along narrow tubes. In our century, scientists used these tubes of light first to look inside the human body and then, as the physics of wave transmission were better understood, to transmit audio and optical information. Hecht explains which technological advances have made fiber optics the backbone of our telephone system in the last 10-15 years and how everyday applications should increase exponentially once fibers are connected directly to our homes. Already optical fibers are used in many surprising ways: guiding laser light in life-saving surgery; embedded in concrete to monitor stress in bridges; wound into gyroscopes to improve airline safety. Hecht's latter chapters are bogged down slightly with details that will mainly interest readers working in related areas, but general science buffs should enjoy his account of the development of the technology that will change our lives in many unexpected ways in the next quarter century. Copyright 1999 Reed Business Information, Inc. --This text refers to the Hardcover edition.

I worked on R&D of fiber optic communication system and device since 1976. Thus, I worked for period as same as the latter 1/3 of this book. I attended OFC from 1999 to 2013 and felt the bubble's up and down by myself. I found several (or more) familiar names with whom I worked and who wrote papers I read again and again. Many technologies are described in the book, but also many people who devoted their time and efforts for fiber optics are introduced. Good book to summarize my own R&D experience in the technical field.

Just like the title says, it is a story/history of optical fibers narrated like a thriller with suspense! It is well detailed and I learnt a lot about science/scientist (and beliefs) by reading this book. Nothing is impossible at the end.

Well written, fascinating and surprising history.

love it!

This is the book which I always recommend to anyone wanting to learn the rich story behind optical fibre communication. Those of us who helped develop the technology tell differing stories, usually ones with much greater emphasis on the significance of our own research communities. Jeff managed to interview all the key players and then wove their different stories into a single exciting tale. This is not a text book, it is an adventure. The more recent history is not included, but don't let

that put you off. Recent history is always distorted in the telling. If you are interested in more information about the UK lab where pioneer and Nobel Laureate Charles Kao began the fibre story, see [...]

Fiber optics, the backbone of local and international communications and of the Internet, seems like a new technology, but in this comprehensive history of the field Jeff Hecht describes the Victorian origins of light guiding via jets of water. In the first half of the 20th century a number of researchers independently discovered flexible glass fibers, and with the introduction of the laser in the 1950s long-distance optical communication became a possibility. The main section of the book focuses on the work of researchers in Britain, Japan, and the United States from the 1950s through the 1980s as they overcome many technical problems and develop the beginnings of modern fiber optic cables, documenting the failures, the dead-ends, and the ultimate success in the early 1980s. Extensively researched and annotated, with much material from primary sources, *City of Light* is accessible to the non-technical reader, yet has enough detail and links to additional sources to satisfy students of engineering history.

This book has a wealth of information on the early years of fibre optics that I have not seen anywhere else. It is full of names and brief explanations of their contribution. But overall I thought this was a dull, slow moving book with little insight. More of an ongoing collection of notes that have been put together for another better book on the history of fibre once the real story finally emerges. There is very little science here. You won't learn much about light physics or why the technology works -only that it does and who patented it. (But the science may be reserved for Hecht's other book.) Also, for those who are trying to keep up with Gilder this book will be disappointing. There is nothing on DWDM (one brief, unexplained mention) or nothing that maps out the current players, companies, or technologies. (I can tell that Gilder has read it because some of the historical facts have been mentioned in the GTR) But there are only a few pages at the end that try to update where the technology has been in the last 10 years, where it is going or why. Huge gaps where a technology is mentioned but not even defined, much less explained. I wish there was a better book on the subject, but for now this is it, and maybe it is worth reading for that reason alone. Sorry to be so critical, but if you like Burke's "Connections" this will only get you lost. It probably would not have been published but for the sudden surge in tech stocks. I hope the Slone series is not all like this.

Hecht does a good job of explaining where the technology of fiber optics communications came

from. His book is not an explanation of how fiber optics communications works, but a history. I have a reasonably good background in fiber optics communications so it's difficult for me to judge whether someone who knew nothing about it would find it easy to follow, although I think they would. I would particularly recommend the book to fiber optic techies - it really makes the technology more meaningful when you understand how the technology developed. A fine job by a good writer - very close to five stars. And if you're technically oriented and want more knowledge of fiber optic technology, I'd recommend "Optical Networks" by Ramaswami and Sivarajan.

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