office automation

telegraph
telephone
organization
information work

Monday, October 30
love on the wires

Henry James (1828-1911)

"In the cage" (1898)
"It is impossible that old prejudices and hostilities should longer exist, while such an instrument has been created for the exchange of thought between all the nations of the earth".

Charles Briggs & Augustus Maverick
The Story of the Telegraph, 1858

"in the cage"
— Henry James
"Steam was the first olive branch offered to us by science. Then came the still more effective olive branch—this wonderful electric telegraph, which enables any man who happens to be within reach of a wire to communicate instantaneously with his fellow men all over the world."

— Ambassador Thornton, 1858

"the girl"

"as if I had no more feelings than a letterbox"

— James
peace & war

Bismark & the Ems telegram

Zimmerman cable

telegraph and empire

"If information is power, whoever rules the world's telecommunications system commands the world"

—Peter Hugill
reports of troop movements

telegraph code controversies

"information wants to be free"

"In 2001 there were thirty three million classification actions; ... roughly 330 million pages were classified last year (about three times as many pages are now being classified as declassified). ... [A]bout five times as many pages are being added to the classified universe than are being brought to the storehouses of human learning, including all the books and journals on any subject in any language". Galison, "Removing Knowledge"
graph to phone

simple harmonics
two hours apart (1876)

Alexander Graham Bell (1847-1922)
AT&T

Elisha Gray (1835-1901)
Western Electric
"Although I had seen a talkaphone before I never tried one before this morning. I could hear the voice very clearly although the speaker was a long distance from me. It was like a voice from another world. Here I was speaking to a person far away from me whom I could hear as though he was at my side and yet I could not see him". Lodi, 1897
"Someday we will build up a world telephone system, making necessary to all peoples the use of a common language or common understanding of languages, which will join all the people of the earth into one brotherhood. There will be heard throughout the earth a great voice coming out of the ether which will proclaim, 'Peace on earth, good will towards men'.

—John J. Carty, AT&T, 1891
mediation

exchanges (1878)

Strowger switch (1892)
looking back,
looking ahead

"communications revolution"
  telegraph
  telephone

technological sublime
  peace
  autonomy
  social revolution

world of business
  vertical integration
  Chandlerian revolution
  supply chain management
communication & organization

changing the way we do business?

paperless office
office of the future
office automation

paradoxes
just in time delivery
increasing autonomy
private enterprise

individual merchants

economy & the "house"

οἶκος
organization & bureaucracy

national & beyond
the state
the church
(time again)

within the nation state
armies
universities
guilds
corporate learning

Bologna, Paris, Oxford

liberal arts (vs artes illiberales)

trivium (grammar, rhetoric, dialectic)

quadrivium (arithmetic, geometry, astronomy, music)
guild learning

the "mysteries of the trade"
"Cunning or Sleight, or Craft of the Hand ... cannot be taught by Words, but is only gain'd by Practice and Exercise".
— Joseph Moxon

crafts & apprenticeship
indenture
journeymen
masters
freedoms

pros & cons?
Moxon's Exercises

Mechanick Exercises, or, The Doctrine of Handy-works.

Began Jan. 1. 1677. And intended to be Monthly continued.

By Joseph Moxon Hydrographer to the Kings most Excellent Majesty.

LONDON,
Printed for Joseph Moxon at the sign of Atlas on Ludgate-Hill, 1677.
organizing: privatization

customs
the tax farm
recruiting
pros & cons?
monopolies: new business

New River Company (1613)

pros & cons?
overseas trade

Levant Company (1581)
East India Company (1600)
Dutch East Indies Company (1602)
Virginia Company (1606)
Newfoundland Company (1610)
Hudson's Bay Company (1670)
South Sea Company (1711)
Falkland company (1852)

pros & cons?
overseas trade

the "factory"

York
Lisbon
Levant
St Petersburg
Porto
growing companies

enclosures & factories
growing companies

joint-stock
private act of Parliament
Joint-Stock Companies Act 1844
growing distant

communication
coordination
control
LETTER II.
Of the Tradesman's writing Letters.

SIR,

I have mention'd already the necessity of a young Tradesman being acquainted with the goods he is to trade in, the customers he is to sell to, and the merchant he is to buy of; and especially of the manner and method of keeping his books, and the necessity of being very exact and regular in his entering, ballancing, and posting his accounts; I hope I need add nothing to those heads.

I come next to mention what some think of small value, but which indeed I think is very material, viz. his learning how to write good Tradesman's language, how to indite his letters in a Tradesman's stile, and to correspond in short like a man of business.
external communication

The COMPLETE ENGLISH TRADESMAN, in FAMILIAR LETTERS: Directing him in all the several Parts and Progressions of TRADE.

"Sir, The destinies having so appointed it, and my dark stars concurring, that I, who by nature was fram’d for better things, should be put out to a trade, and the Gods having been so propitious to me in the time of my servitude, that at length the days are expir’d; I am now launch’d forth into the great ocean of Business, I thought fit to acquaint you, that last month I receiv’d my fortune, which by my father’s will had been my due two years past, at which time I arriv’d to man’s estate, and became major; whereupon I have taken a house in one of the principal streets of the town of —— where I am entred upon my business, and hereby let you know that I shall have occasion for the goods hereafter mention’d, which you may send to me by the carrier."
The COMPLETE ENGLISH TRADESMAN, in Familiar Letters: Diring him in all the several Parts and Progresions of TRADE.

Sir, yours receiv'd, have at present little to reply. Last post you had bills of loading with invoice of what had loaden for your account in Hambro' factor bound for said port. What have farther orders for shall be dispatch'd with expedi-tion. Markets slacken much on this side, cannot sell the iron for more than 37s. with had your orders if shall part with it at that rate. No ships since the 11th. London fleet may be in the roads before the late storm, so hope they are safe: if have not ensur'd, please omit the same till hear farther; the weather proving good, hope the danger is over.

My last transmitted three bills exchange, import £ 315. please signify if are come to hand, and accepted, and give credit in account cur- rent to

Your humble Servant.
Please to send per first ship 150 chests best Seville, and 200 pipes best Lisbon white. May value yourself per exchange 1250 l. Sterling for the account of above orders. Suppose you can send the sloop to Seville for the order'd chests, &c.

I am

Here is the order to send a cargo, with a please to send; so the factor may let it alone if he does not please. The order is 150 chest Seville; 'tis supposed he means oranges, but it may be 150 chests orange-trees as well, or chests of oil, or any thing. Lisbon white may be wine, or any thing else, tho' 'tis supposed to be wine. He may draw 1250 l. but he may refuse to accept it if he pleases, for any thing such an order as that obliges him.
storage & retrieval

the letter book

pros & cons?
new technology
new technology
new technology
information workers

**clerks (UK)**
- 1871: 262,100
- 1891: 534,622
- 1911: 918,186

**female clerks**
- 1891: 17,859
- 1911: 117,057
1921, women 46% of all clerks

**typewriter girls**
- 1931, 212,296 female typists
- 5,155 male typists
growing organization

ew new communication needs

external to internal
letters to memos

narrowcast to broadcast
the circular
The modern corporation

The Chandlerian revolution
Vertical integration

A nation transformed by information

Butcher, Tool Maker, Stacker of Wheat Player with Railroads and Freight Handler to the Nation

Information alone?
transformed by technology?

Lyons Corner House
Samuel Gluckstein & Joseph Lyons, 1887

from London to Darjeeling
tea & cakes
wheat, flour
baking
printing
packaging
laundry
LEO

John Simmons
Lyons & Cambridge (1947)
ENIAC
EDVAC
UNIVAC
EDSAC

CLEO
1954
from payroll to baking

pros & cons?
LCL to ICL to IBM
go buy the book

the oldest commodity

the book trade
printers
stationers
booksellers
chains: W. H. Smith
from supplier to customer

1971: Book Inventory System

1992: Kmart purchase
the paperless office

Chester Carlson
patent, 1937

Haloid to Xerox
the copier

the computer

the laser printer

paperless?
"The Xerox scenario for the manager is certainly different from the one that IBM envisions. One former IBMer says that the company plans to provide minimum hardware for the manager in his office and to use its big central computer systems. This approach, of course, preserves IBM's greatest asset".

"There is absolutely no question that there will be a revolution in the office over the next 20 years. What we are doing will change the office like the jet plane revolutionized travel and the way that TV has altered family life". —George Pake
"This climate is almost forcing the revolution in the office," declares Robert E. Verrando, marketing chief for Xerox' Office Systems Div. But word processing is a tough sell, particularly since it so often changes the traditional secretary-executive relationship. "The biggest problem we face is the office wife," says Lexitron's Pugh. "She likes giving total loyalty to one boss, and he likes getting it".

—Business Week
nature of the firm

Ronald Coase (1937)
"transaction costs"

"the law of diminishing firms"
--Downes & Mui

Alfred Marshall
"mysteries of the region"

"Every cheapening of the means of communication alters the action of the forces that tend to localize industries"