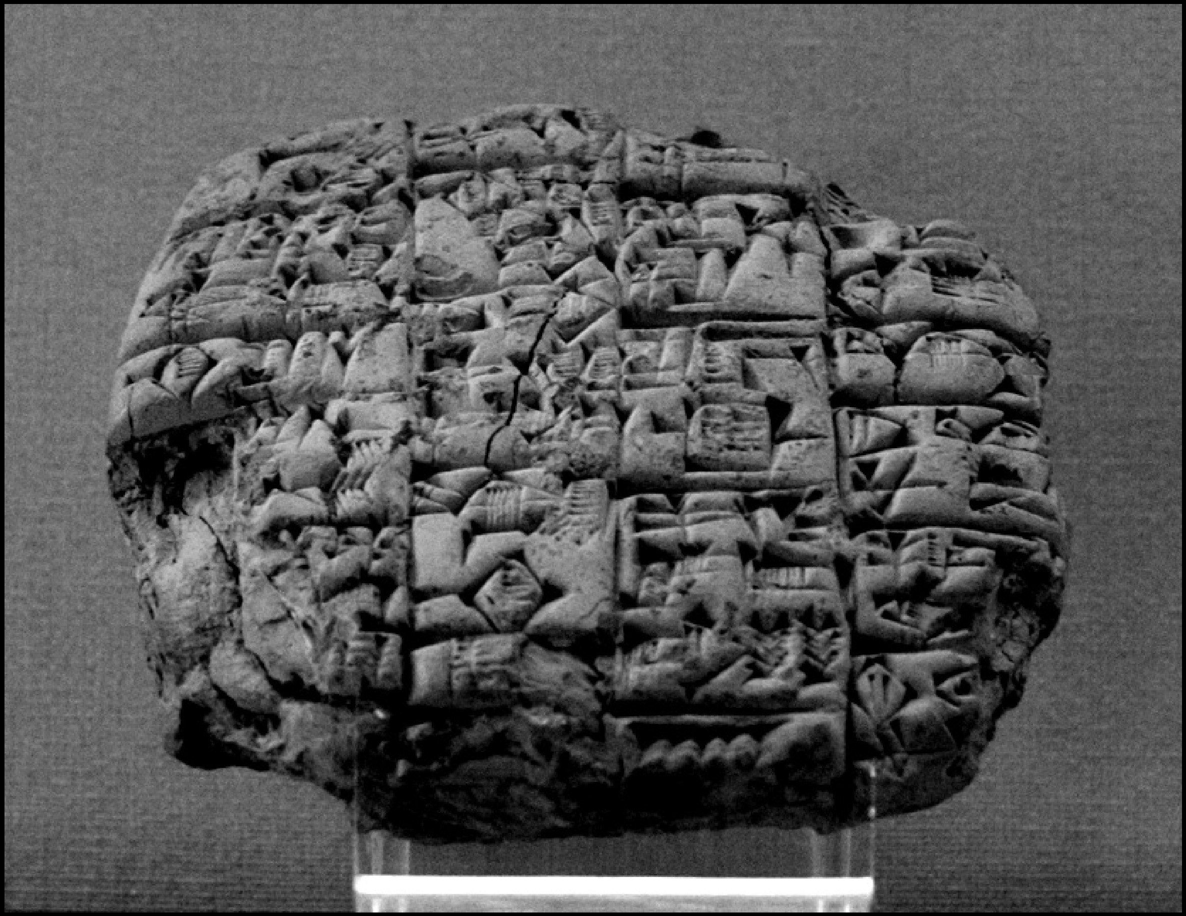
Cronologia dell'Informatica

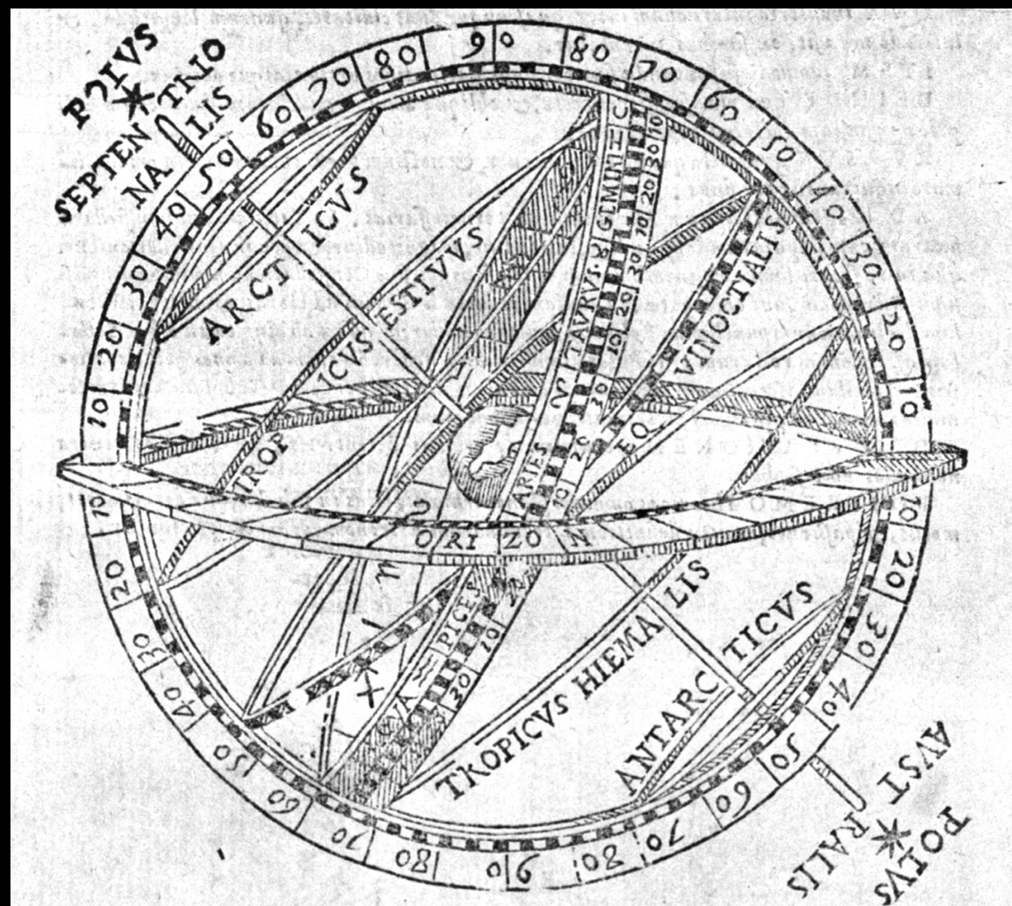
the directors' cut

Museo degli Strumenti per il Calcolo
Pisa, 14 aprile 2012

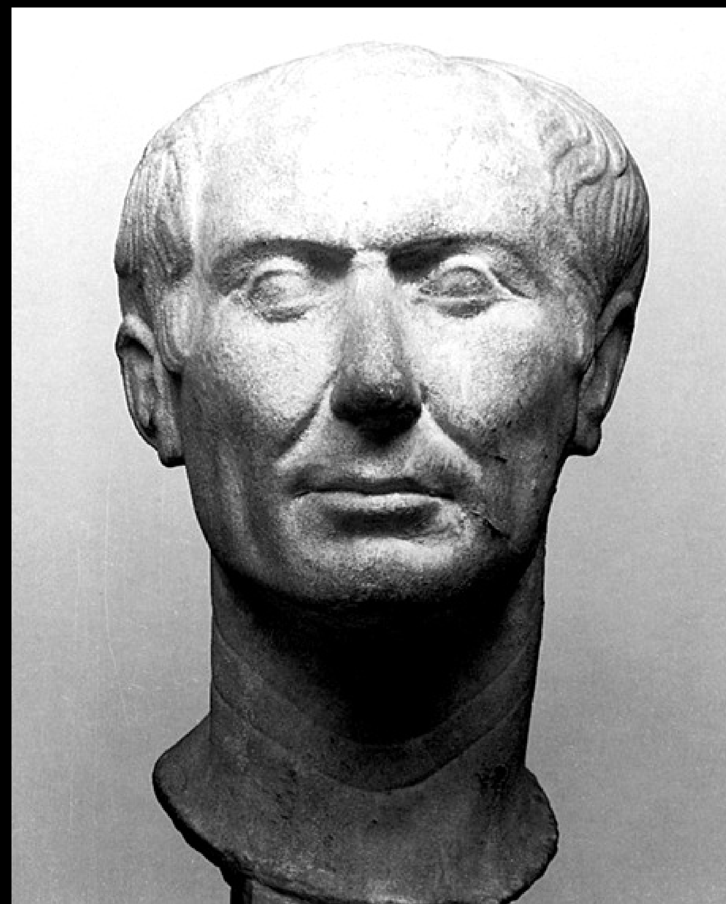
-3000, scrittura alfabetica



-255, sfera armillare

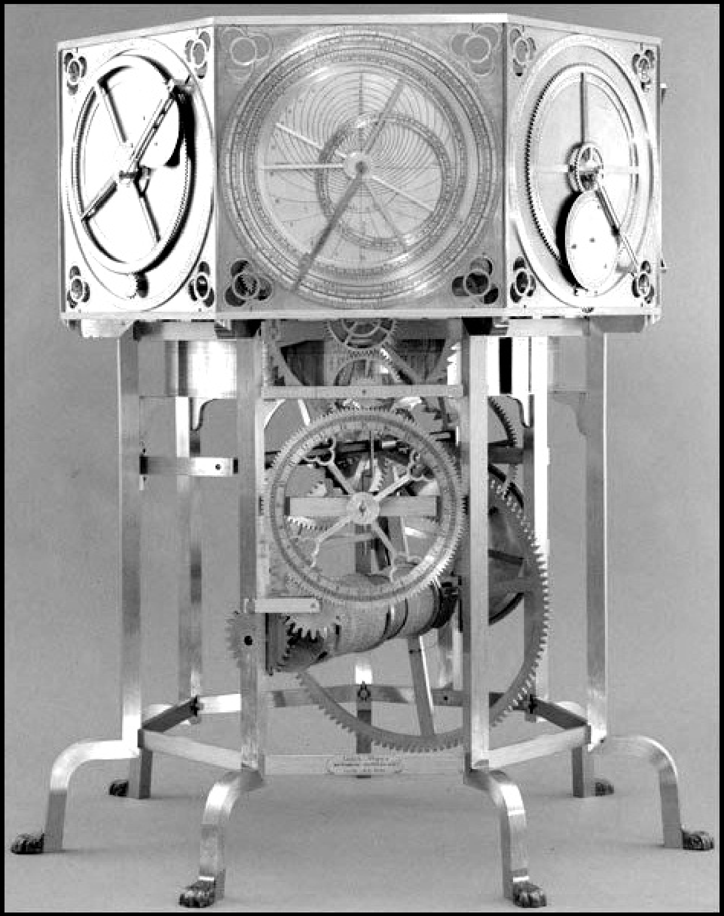


-54, cifrario di Cesare

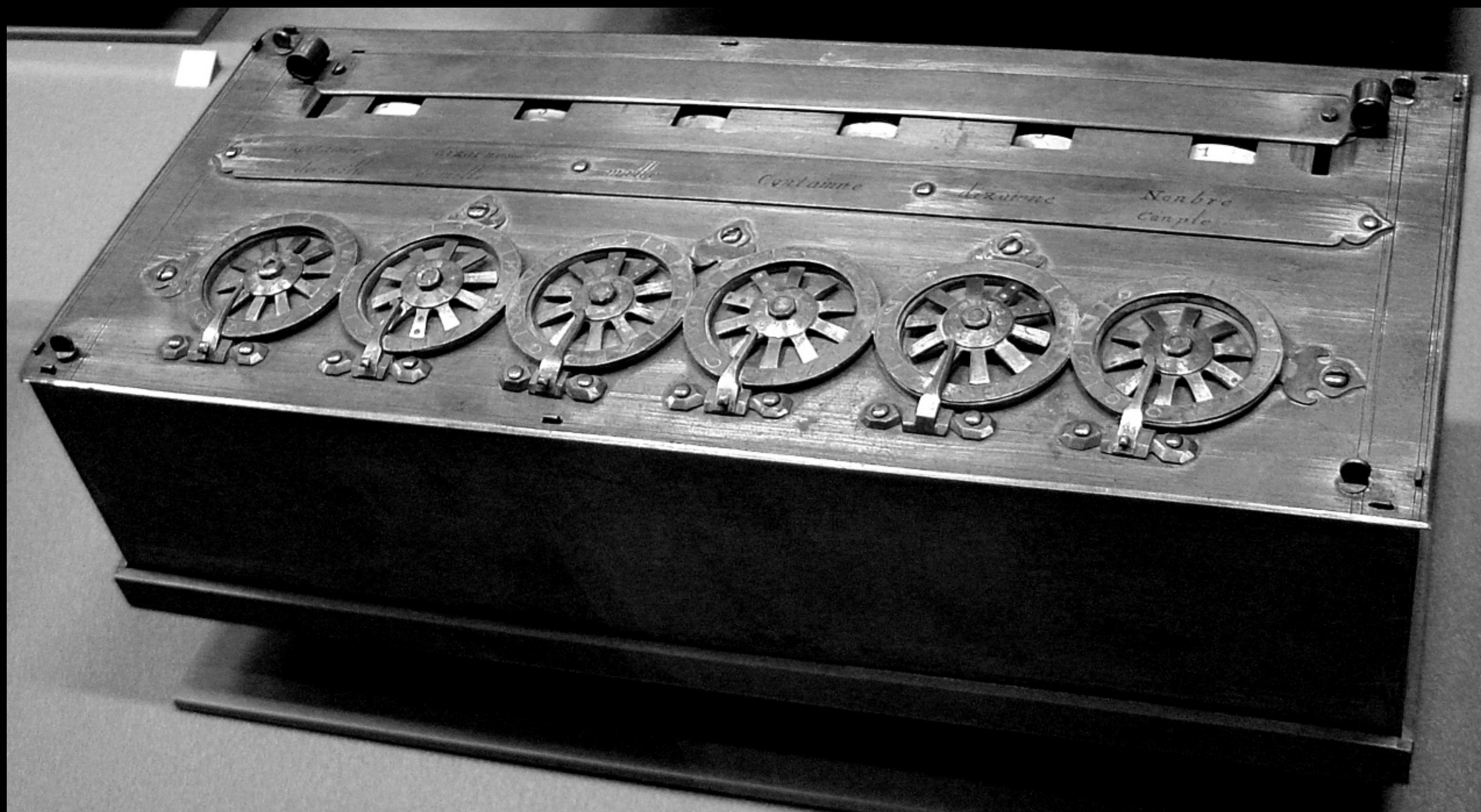


100, macchina di Antikythera

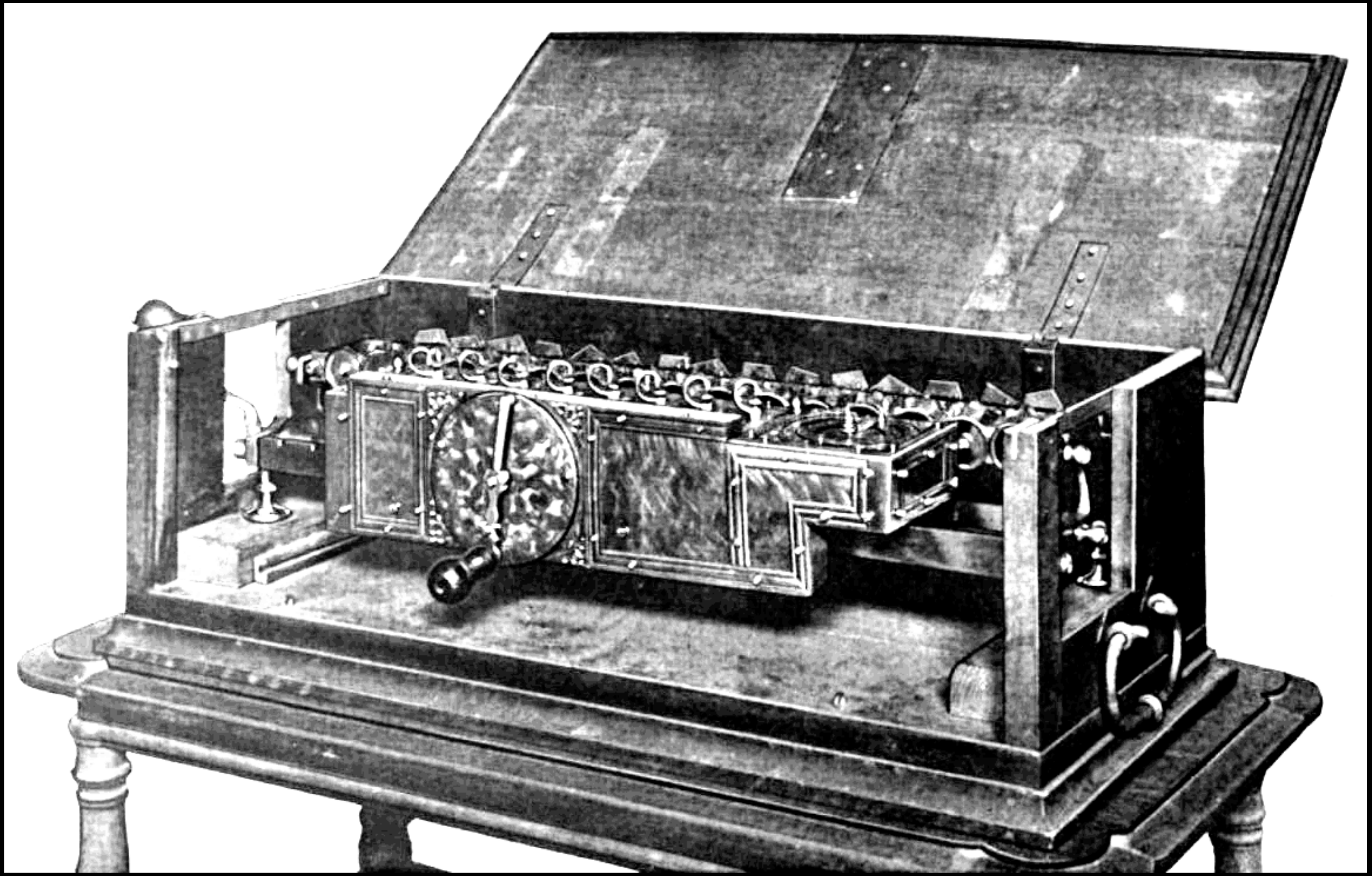
1381, Astrarium di De' Dondi



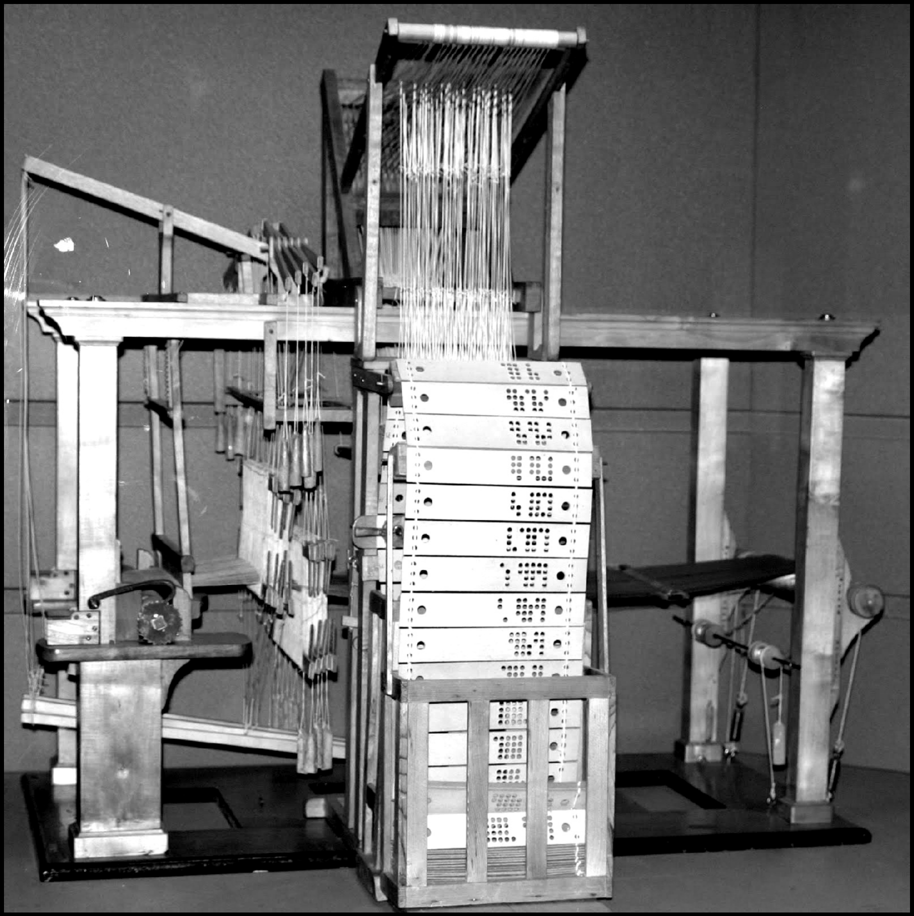
1643, Pascaline



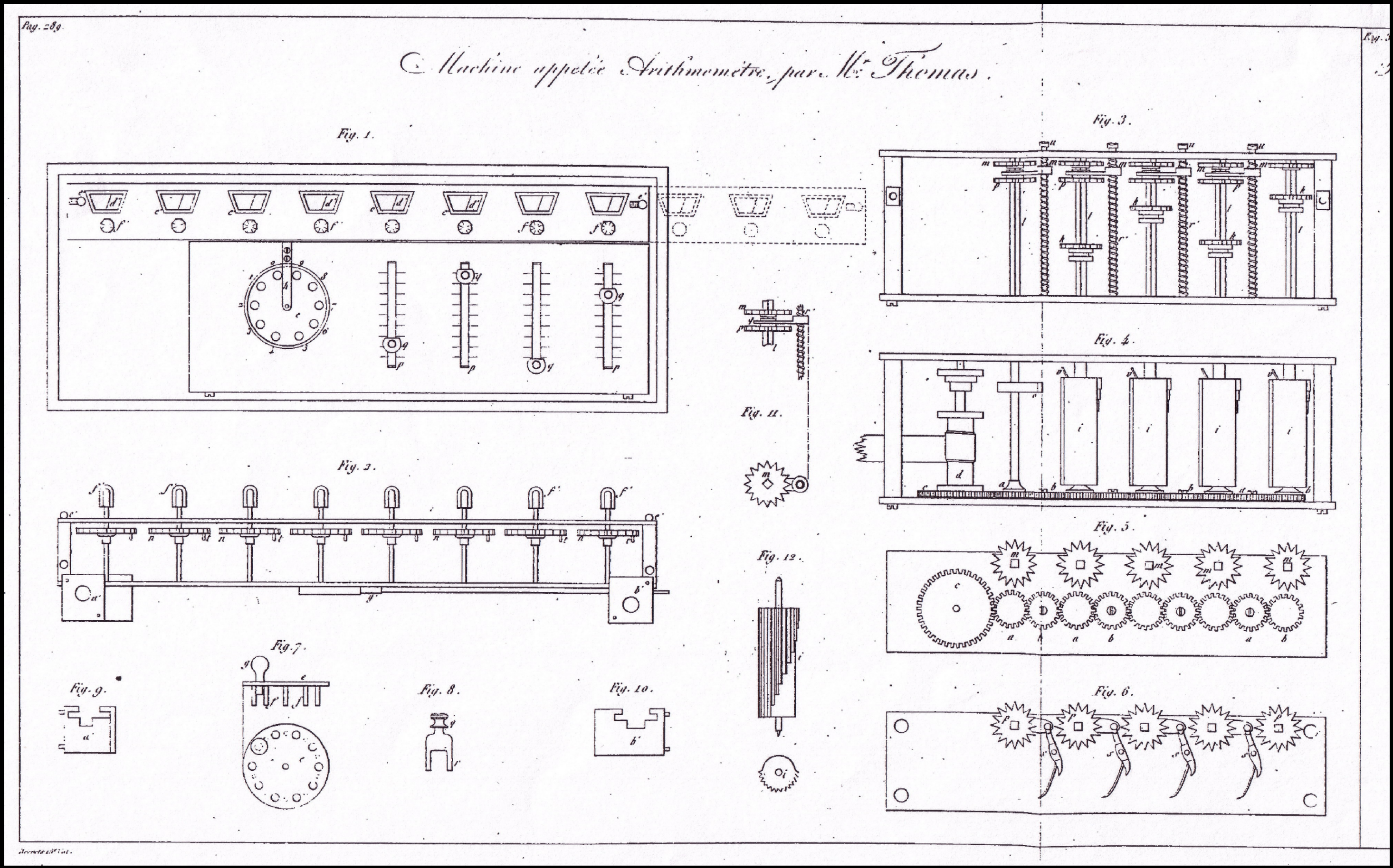
1694, Reckenmaschine



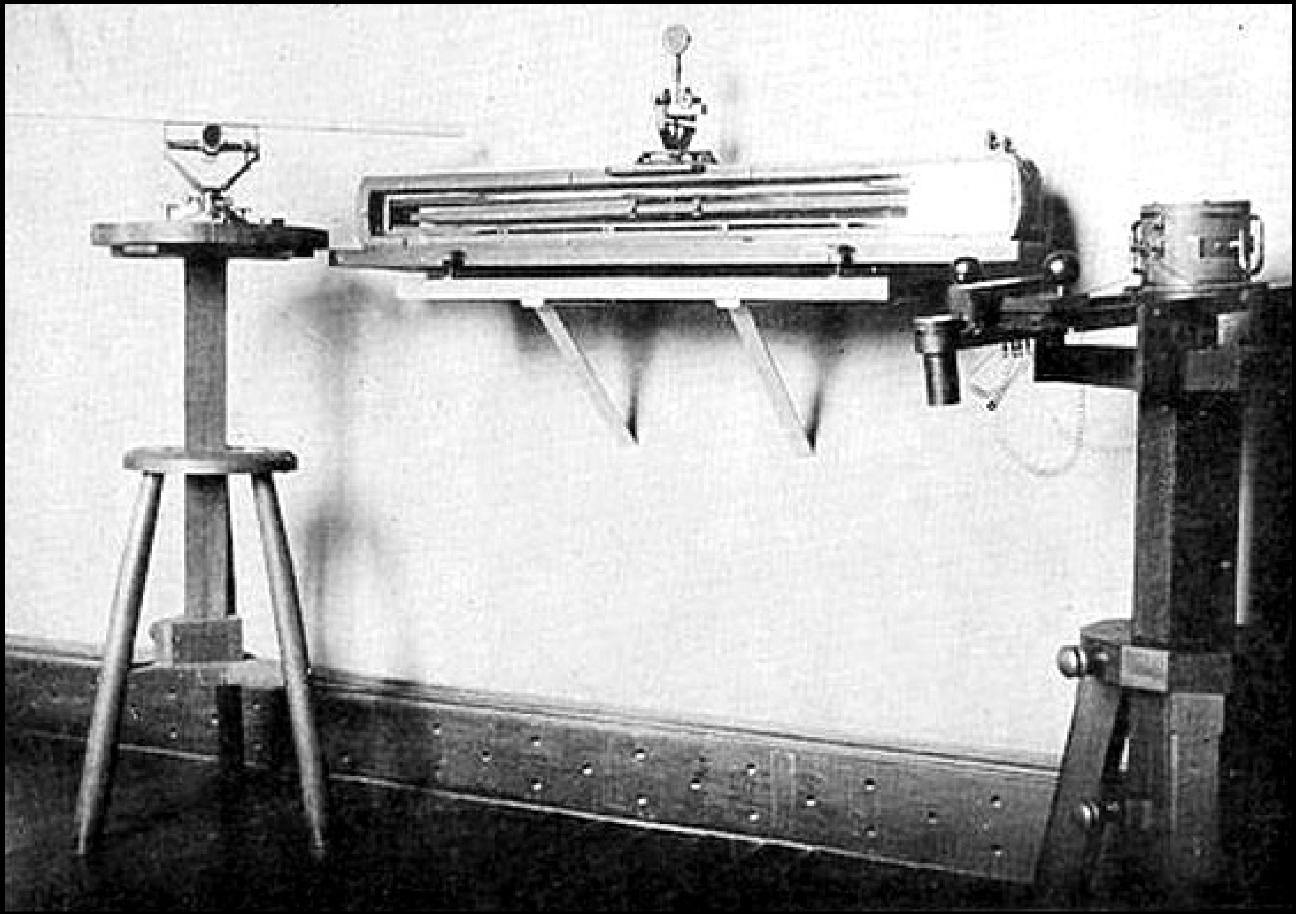
1801, telaio Jaquard



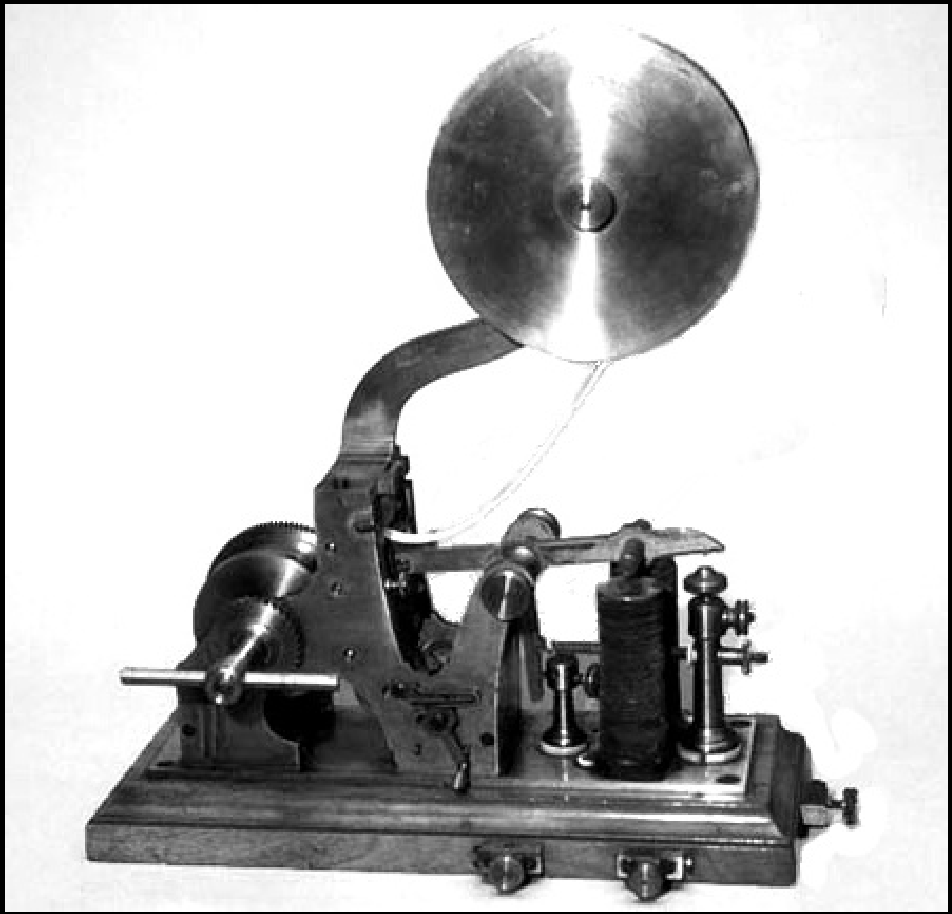
1820, Thomas De Colmar



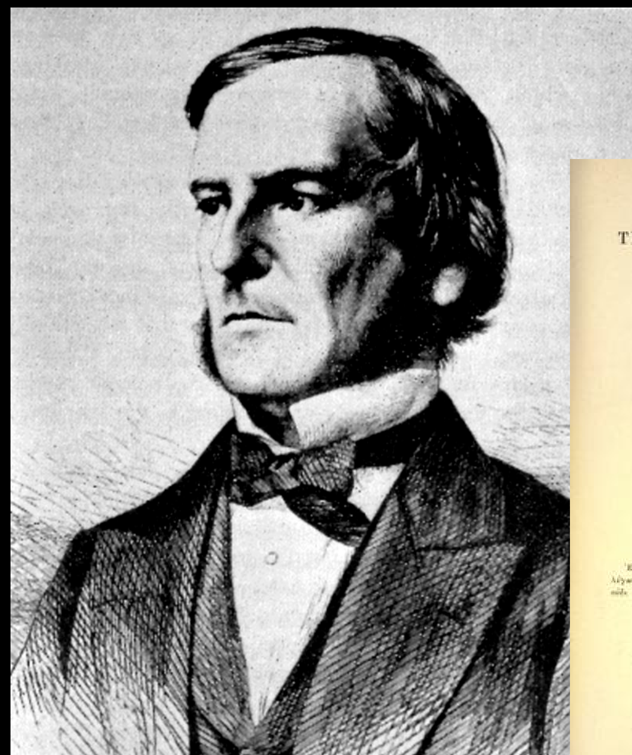
1833, telegrafo Gauss-Weber

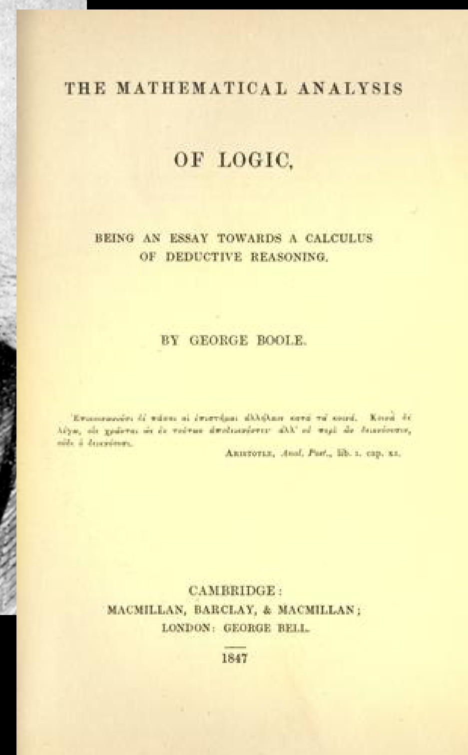


1844, telegrafo Morse



1847, algebra di Boole




THE MATHEMATICAL ANALYSIS

OF LOGIC,

BEING AN ESSAY TOWARDS A CALCULUS
OF DEDUCTIVE REASONING.

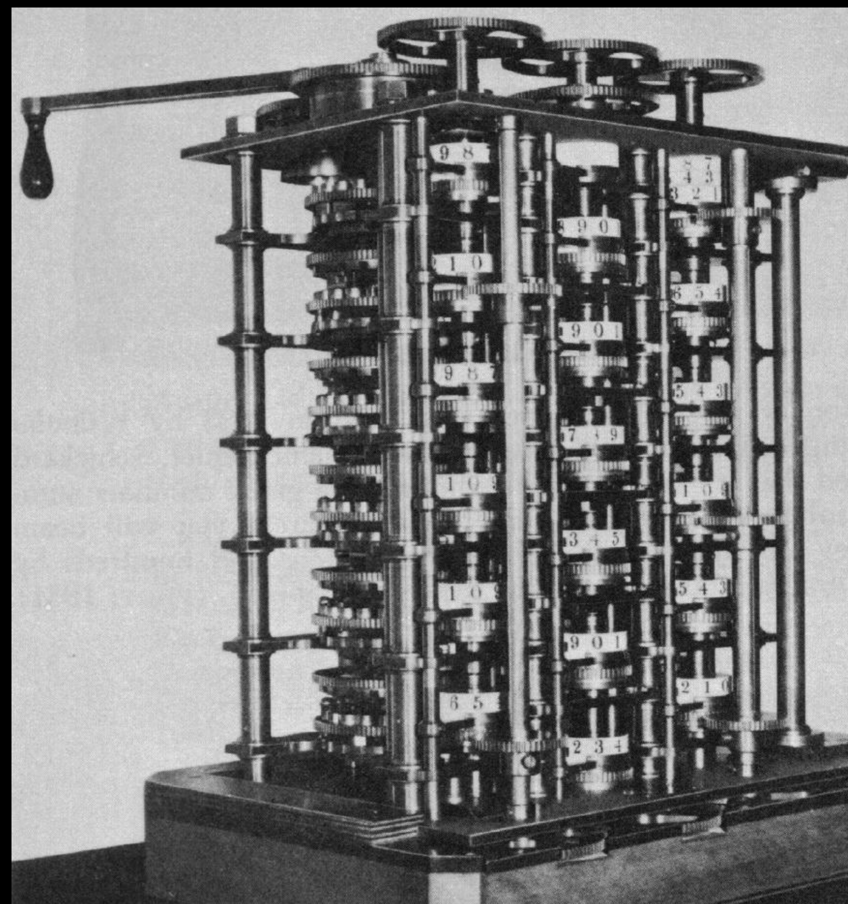
BY GEORGE BOOLE.

ARISTOTLE, *Anal. Post.*, lib. i. cap. xi.

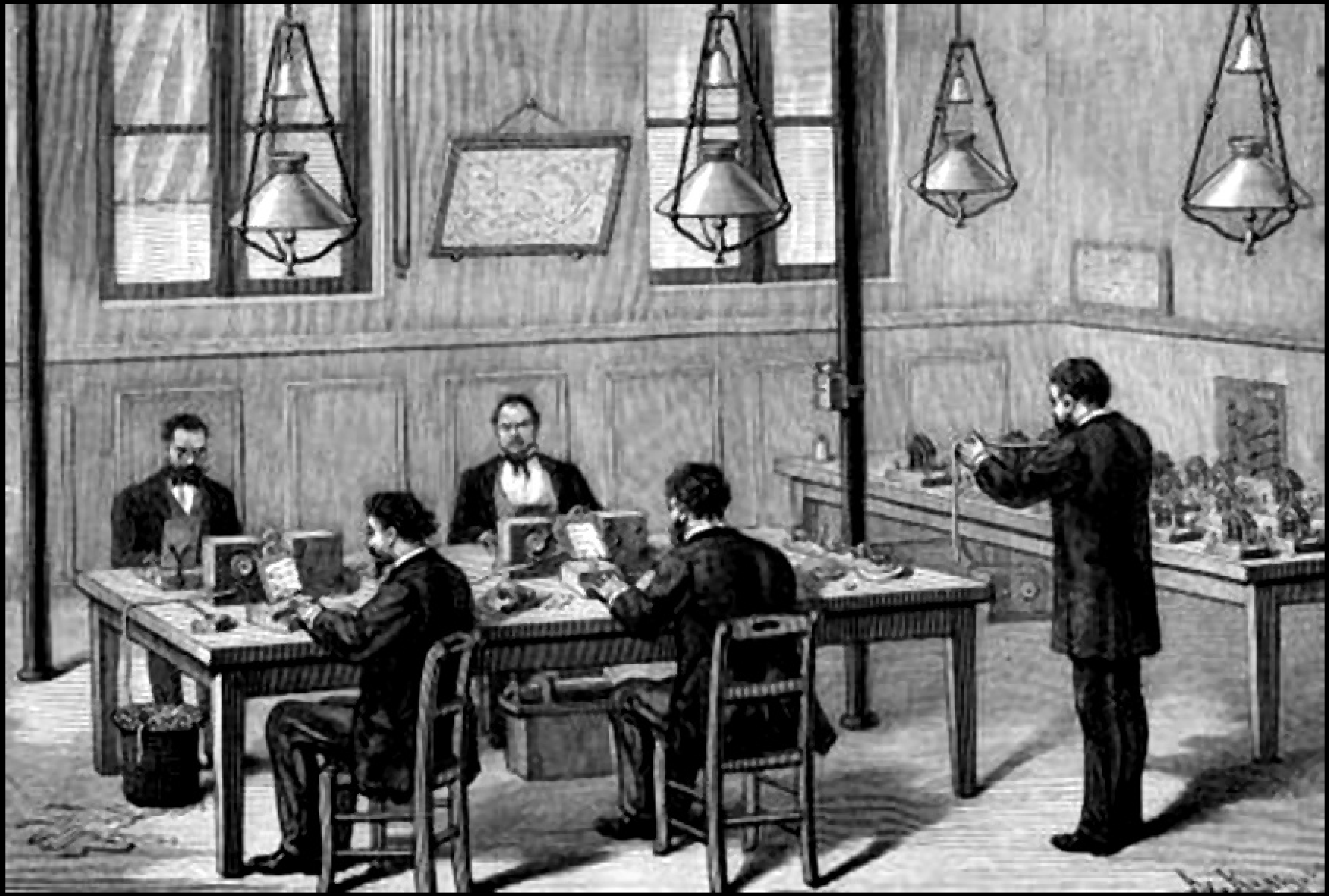
CAMBRIDGE:
MACMILLAN, BARCLAY, & MACMILLAN;
LONDON: GEORGE BELL.

1847

1849, macchine di Babbage

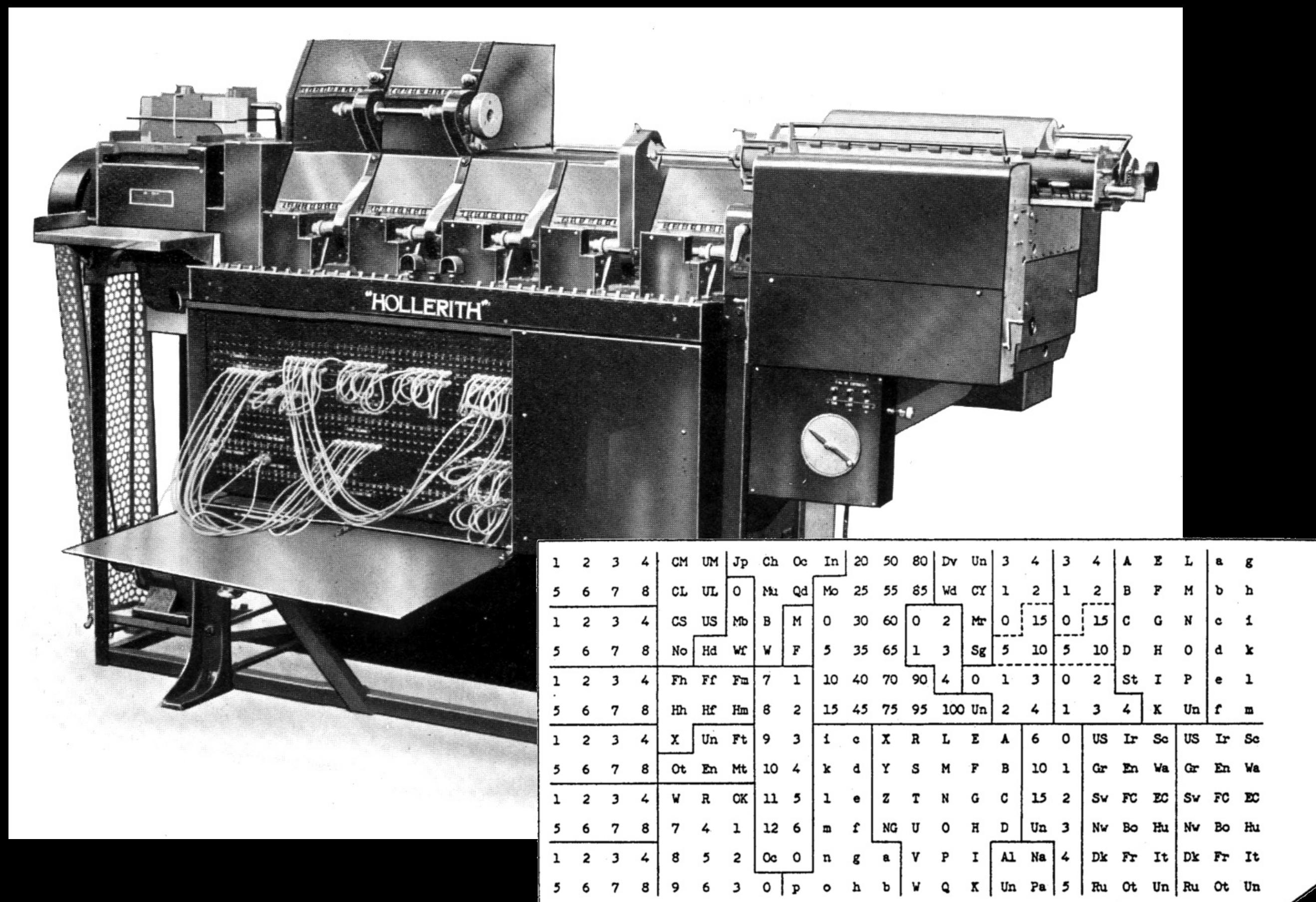


1874, codifica Baudot



1880, tiker tape

1896, macchine di Hollerith



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1	2	3	4	CS	US	Mb	B	M	0	30	60	0	2	Mr	0	15	0	15	C	G	N	c	i
5	6	7	8	No	Hd	Wf	W	F	5	35	65	1	3	Sg	5	10	5	10	D	H	O	d	k
1	2	3	4	Fh	Ff	Fm	7	1	10	40	70	90	4	0	1	3	0	2	St	I	P	e	l
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1	2	3	4	X	Un	Ft	9	3	i	c	X	R	L	E	A	6	0	US	Ir	Sc	US	Ir	Sc
5	6	7	8	Ot	En	Mt	10	4	k	d	Y	S	M	F	B	10	1	Gr	En	Wa	Gr	En	Wa
1	2	3	4	W	R	CK	11	5	l	e	Z	T	N	G	C	15	2	Sw	FC	EC	Sw	FC	EC
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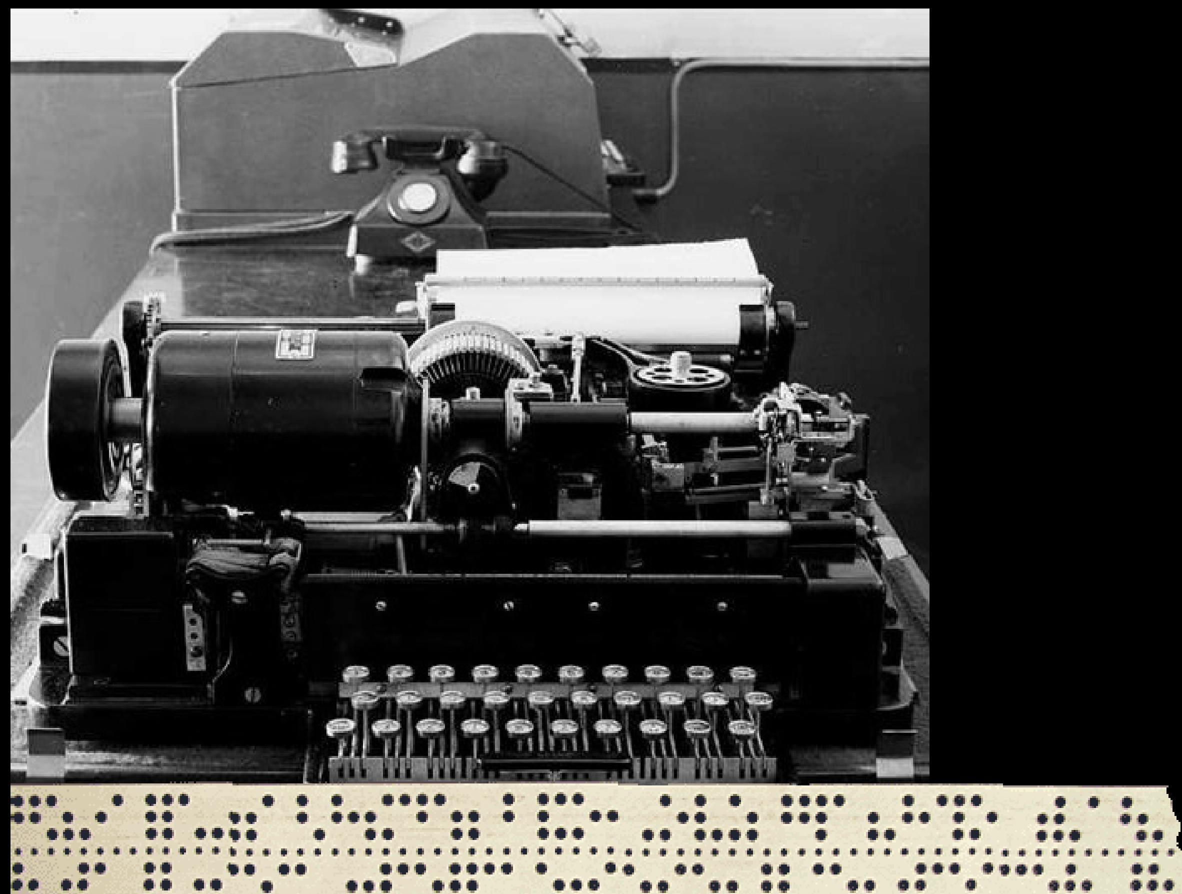
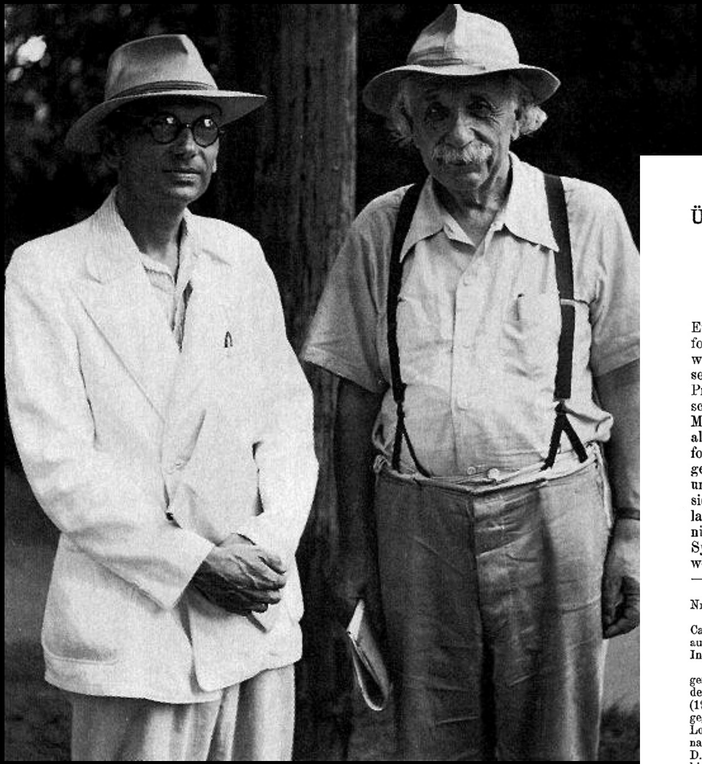
1	2	3	4	8	5	2	Oc	0	n	g	a	V	P	I	Al	Na	4	Dk	Fr	It	Dk	Fr	It
5	6	7	8	9	6	3	0	p	o	h	b	W	Q	K	Un	Pa	5	Ru	Ot	Un	Ru	Ot	Un

1901, telescriventi di Murray



1928, Entscheidungsproblem

1931, teorema di Gödel



Über formal unentscheidbare Sätze der Principia Mathematica und verwandter Systeme I[1].

Von Kurt Gödel in Wien.

1.

Die Entwicklung der Mathematik in der Richtung zu größerer Exaktheit hat bekanntlich dazu geführt, daß weite Gebiete von ihr formalisiert wurden, in der Art, daß das Beweisen nach einigen wenigen mechanischen Regeln vollzogen werden kann. Die umfassendsten derzeit aufgestellten formalen Systeme sind das System der Principia Mathematica (PM)[2] einerseits, das Zermelo-Fraenkelsche (von J. v. Neumann weiter ausgebildete) Axiomensystem der Mengenlehre[3] andererseits. Diese beiden Systeme sind so weit, daß alle heute in der Mathematik angewendeten Beweismethoden in ihnen formalisiert, d. h. auf einige wenige Axiome und Schlußregeln zurückgeführt sind. Es liegt daher die Vermutung nahe, daß diese Axiome und Schlußregeln dazu ausreichen, alle mathematischen Fragen, die sich in den betreffenden Systemen überhaupt formal ausdrücken lassen, auch zu entscheiden. Im folgenden wird gezeigt, daß dies nicht der Fall ist, sondern daß es in den beiden angeführten Systemen sogar relativ einfache Probleme aus der Theorie der gewöhnlichen ganzen Zahlen gibt[4], die sich aus den Axiomen nicht

---

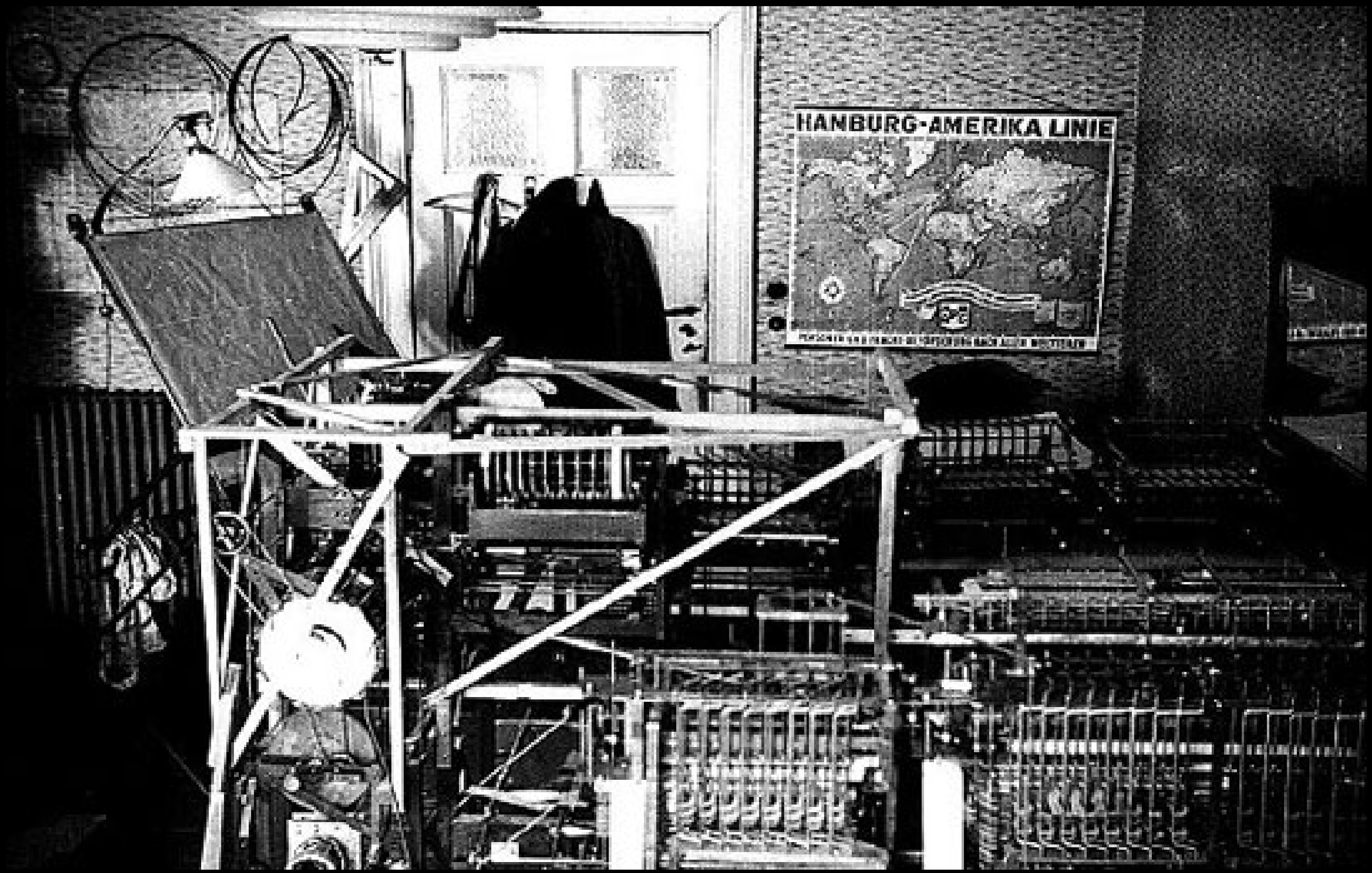
[1] Vgl. die im Anzeiger der Akad. d. Wiss. in Wien (math.-naturw. Kl.) 1930, Nr. 19 erschienene Zusammenfassung der Resultate dieser Arbeit.

[2] A. Whitehead und B. Russell, Principia Mathematica, 2. Aufl., Cambridge 1925. Zu den Axiomen des Systems PM rechnen wir insbesondere auch: Das Unendlichkeitsaxiom (in der Form: es gibt genau abzählbar viele Individuen), das Reduzibilitäts- und das Auswahlaxiom (für alle Typen).

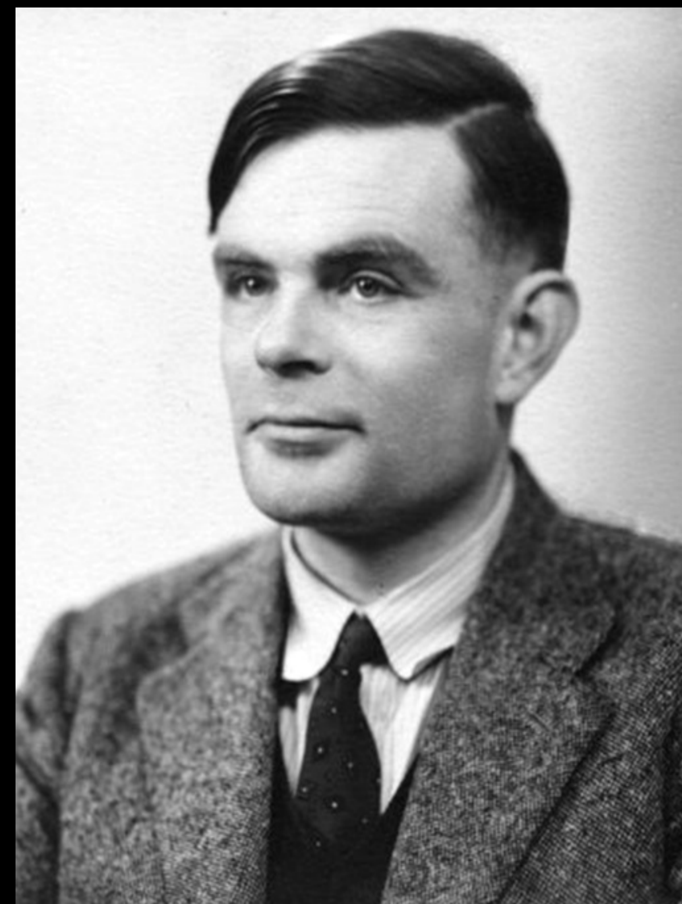
[3] Vgl. A. Fraenkel, Zehn Vorlesungen über die Grundlegung der Mengenlehre, Wissensch. u. Hyp. Bd. XXXI. J. v. Neumann, Die Axiomatisierung der Mengenlehre. Math. Zeitschr. 27, 1928. Journ. f. reine u. angew. Math. 154 (1925), 160 (1929). Wir bemerken, daß man zu den in der angeführten Literatur gegebenen mengentheoretischen Axiomen noch die Axiome und Schlußregeln des Logikkalküls hinzufügen muß, um die Formalisierung zu vollenden. — Die nachfolgenden Überlegungen gelten auch für die in den letzten Jahren von D. Hilbert und seinen Mitarbeitern aufgestellten formalen Systeme (soweit diese bisher vorliegen). Vgl. D. Hilbert, Math. Ann. 88, Abh. aus d. math. Sem. der Univ. Hamburg I (1922), VI (1928). P. Bernays, Math. Ann. 90. J. v. Neumann, Math. Zeitschr. 26 (1927). W. Ackermann, Math. Ann. 93.

[4] D. h. genauer, es gibt unentscheidbare Sätze, in denen außer den logischen Konstanten: $\overline{}$ (nicht), $\vee$ (oder), (x) (für alle), $=$ (identisch mit) keine anderen Begriffe vorkommen als $+$ (Addition), . (Multiplikation), beide bezogen auf natürliche Zahlen, wobei auch die Präfixe (x) sich nur auf natürliche Zahlen beziehen dürfen.

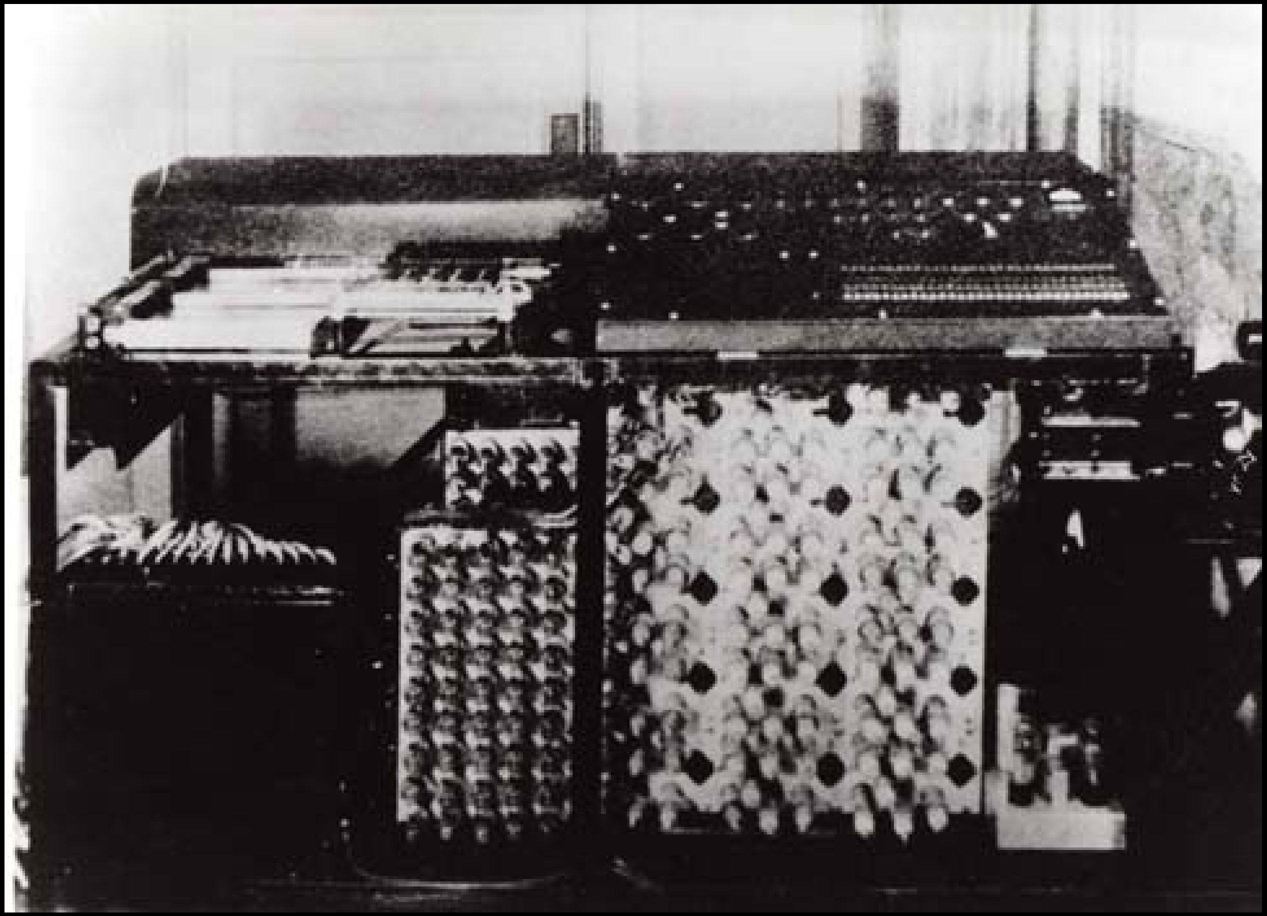
1934, Zuse Z1



1936, Church e Turing

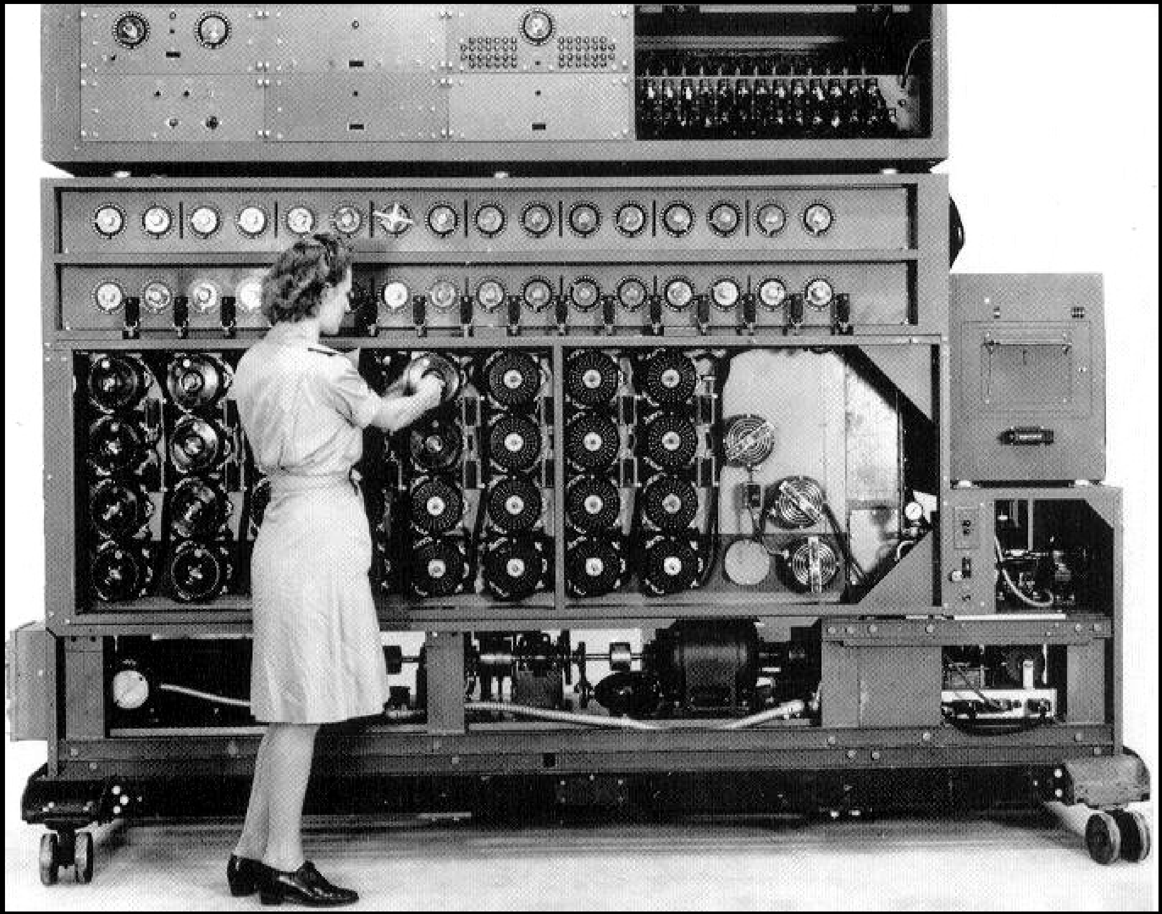


1939, Atanasoff-Berry

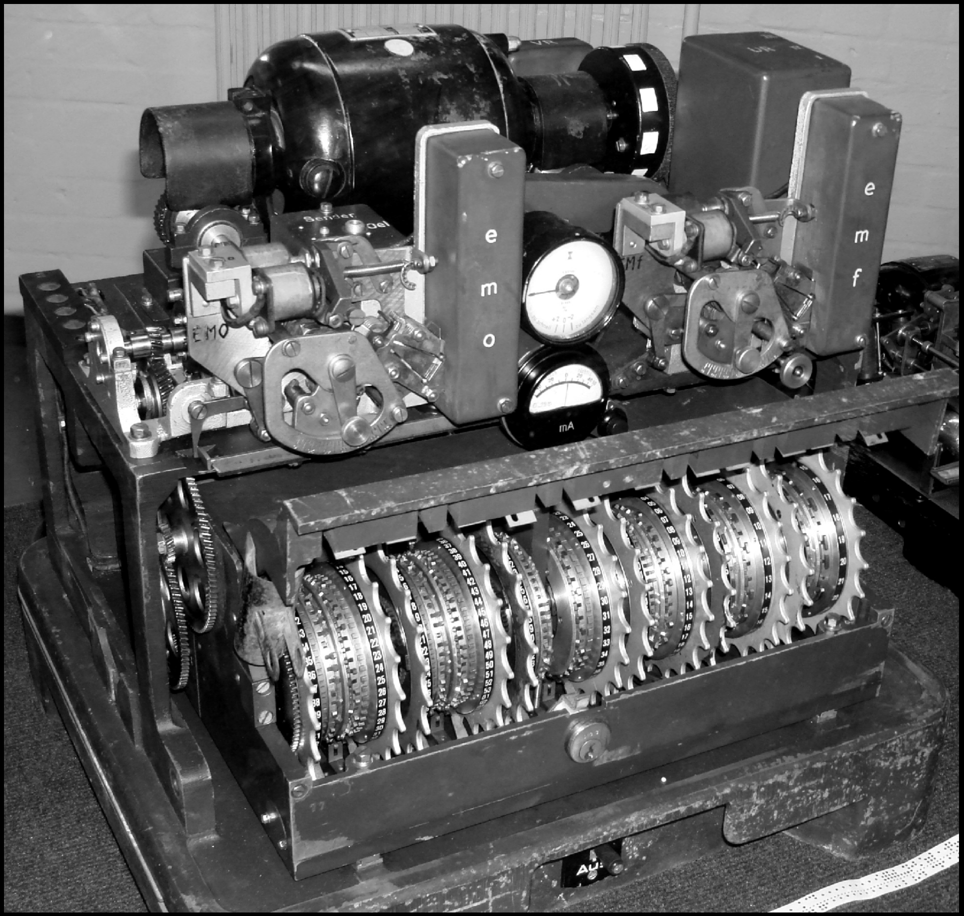


1942, Kriegsmarine Enigma …

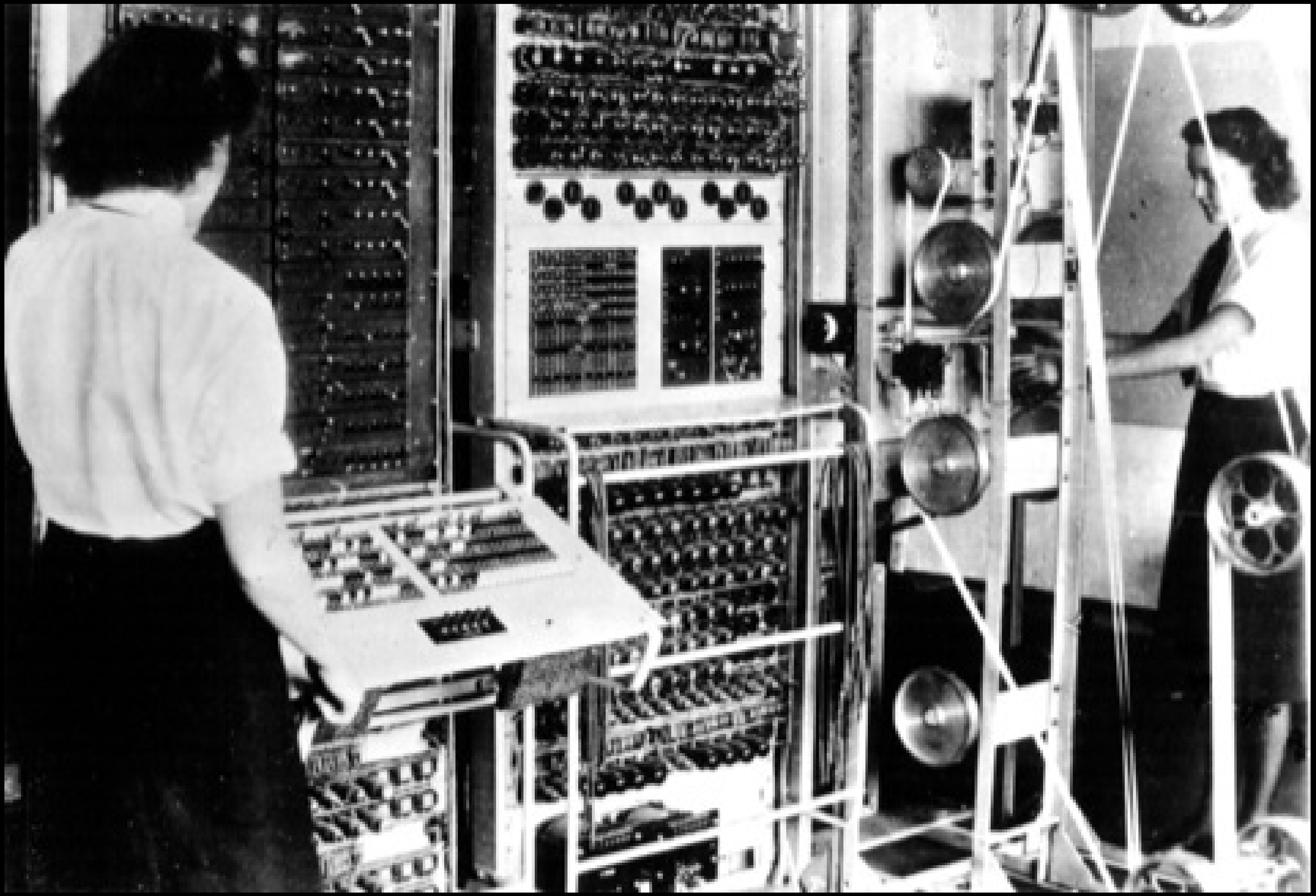
… vs US Navy Bombe



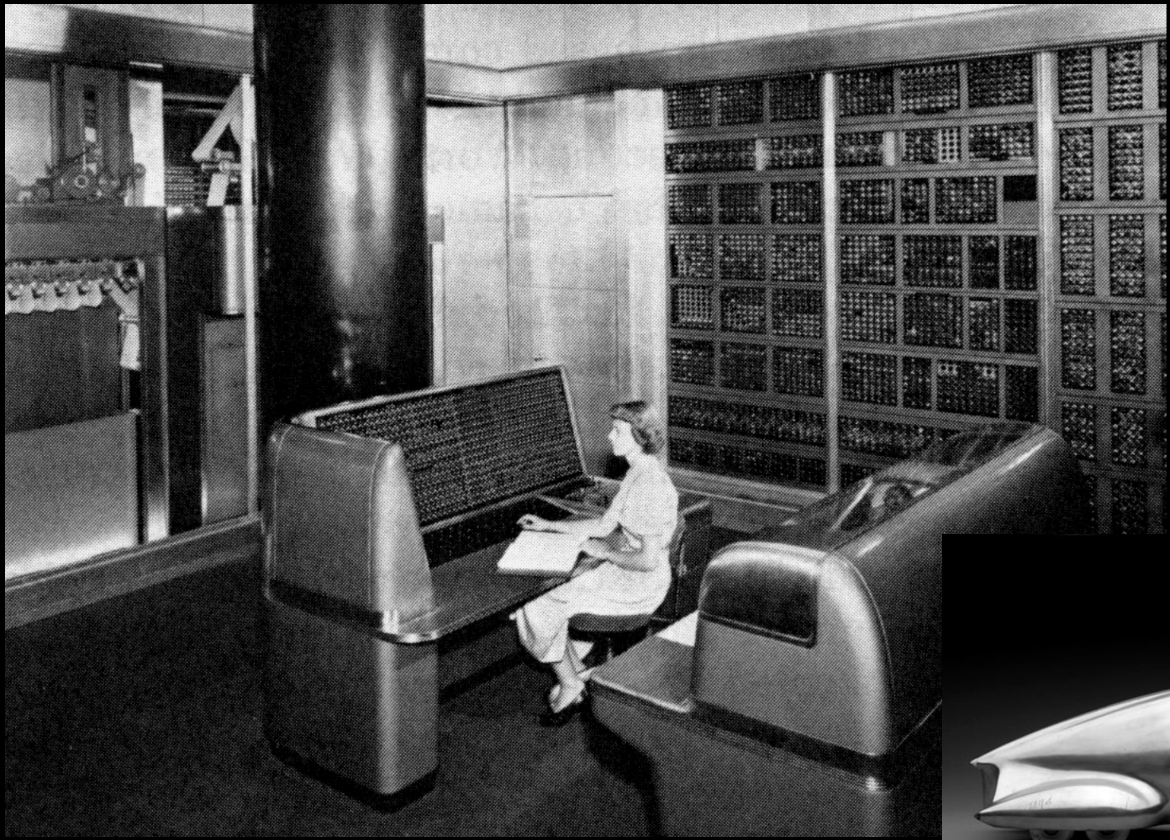
1943, Lorenz SZ42 …

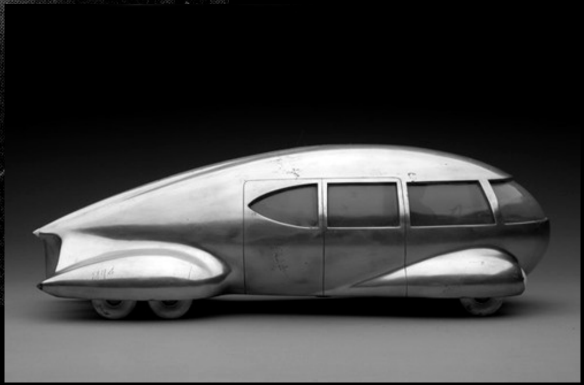


... vs Colossus

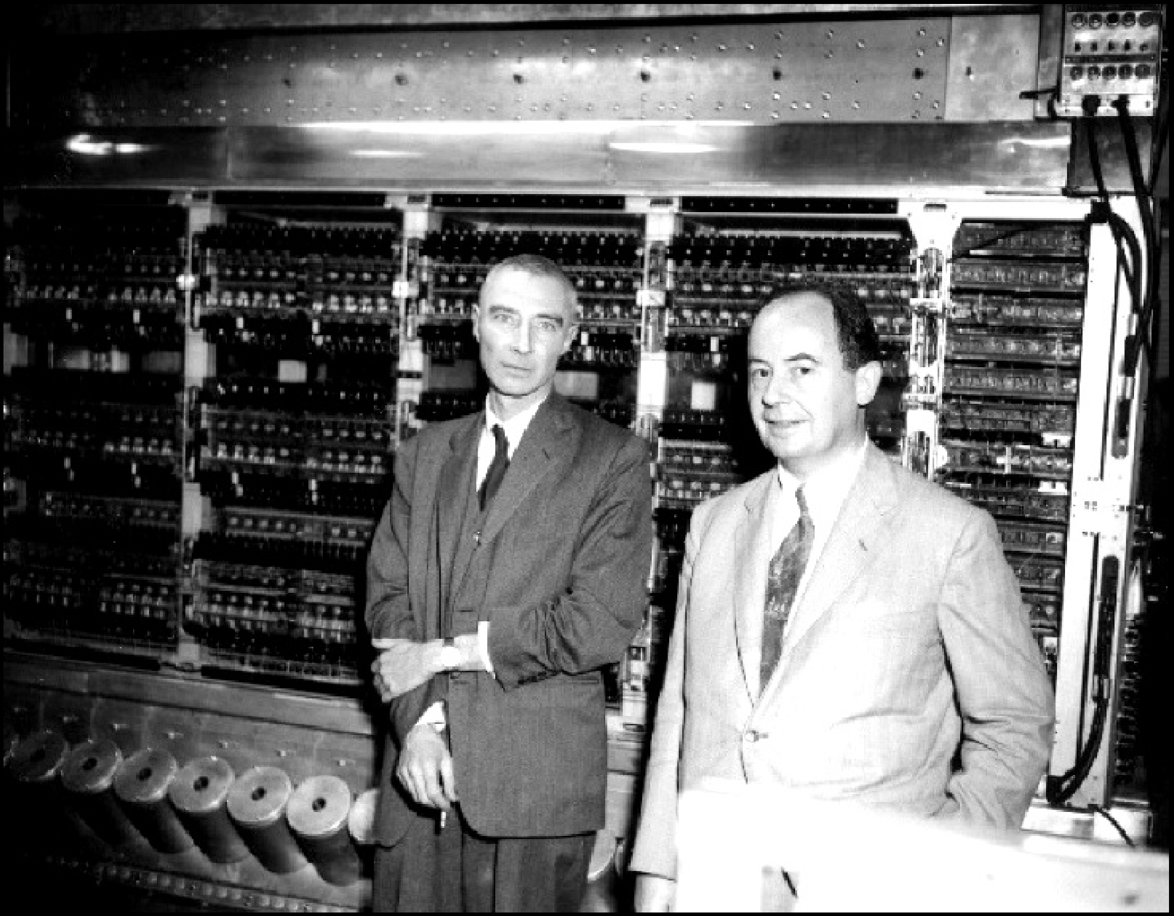


1944, Harvard MkI / IBM ASCC

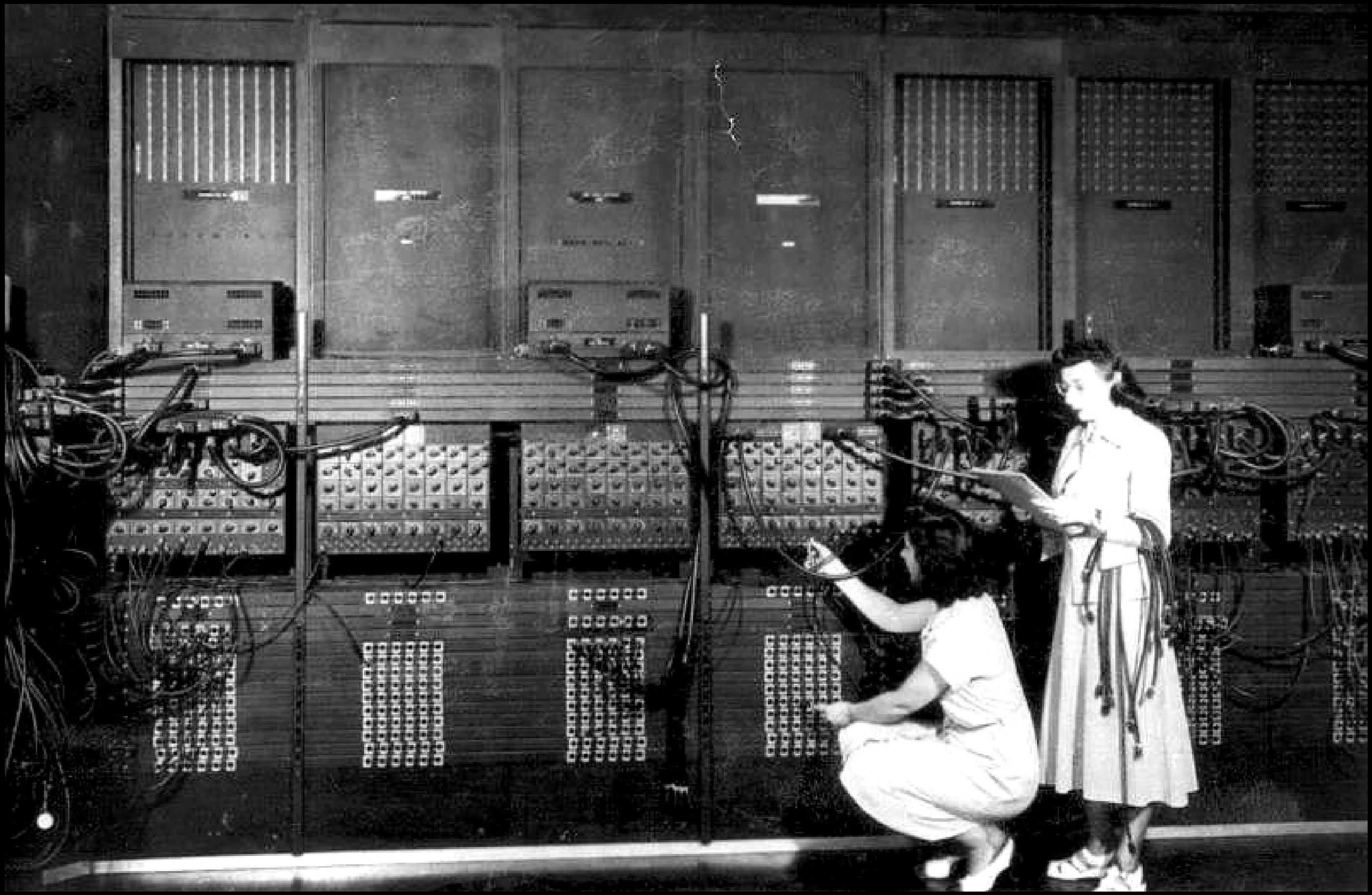




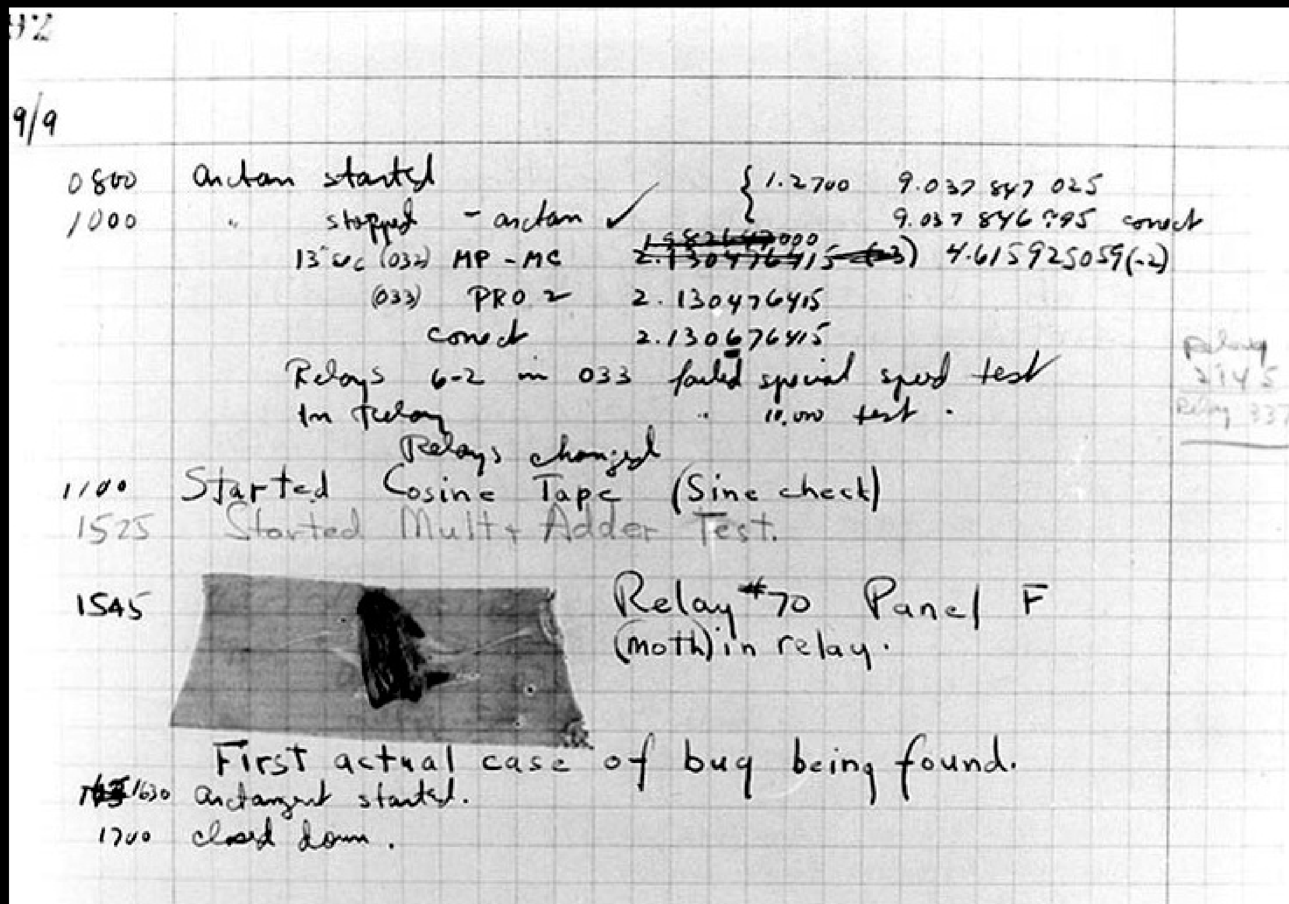
1945, Von Neumann



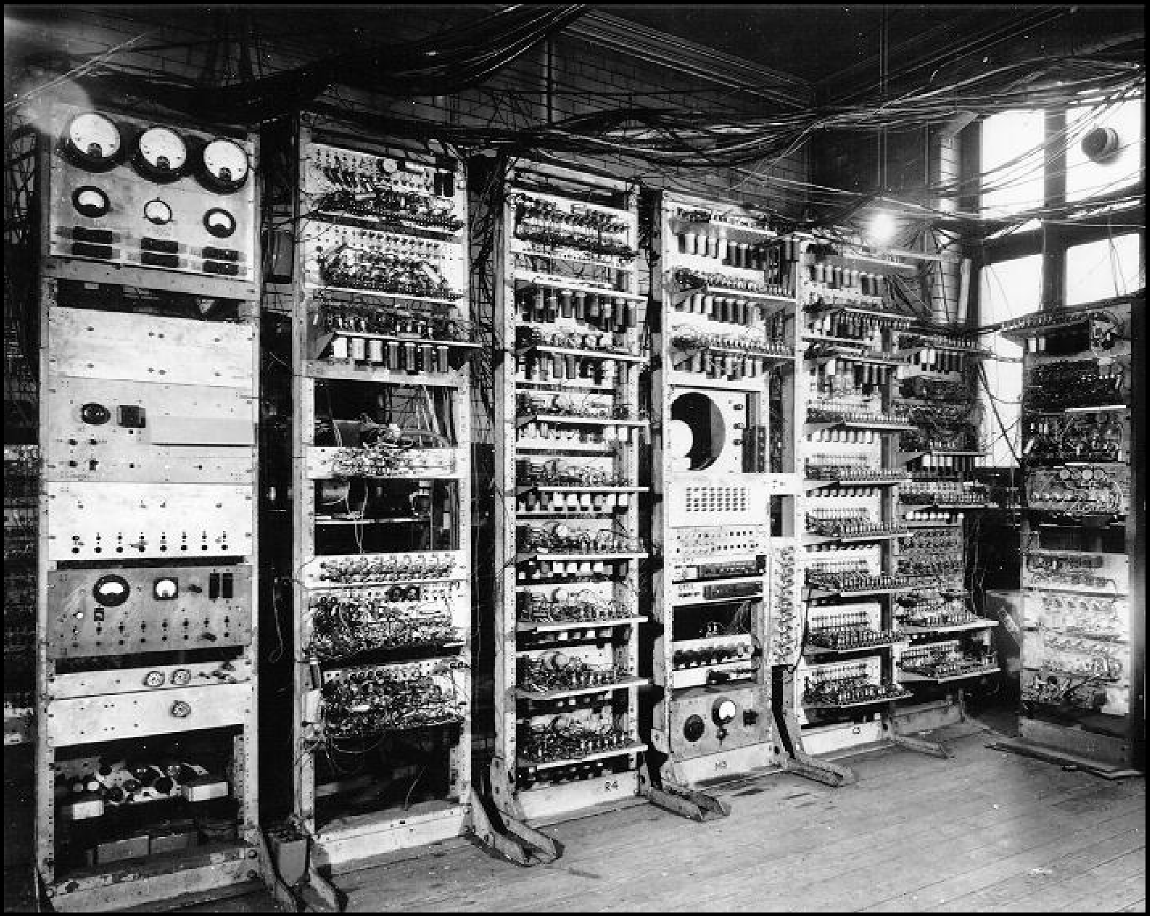
1946, ENIAC



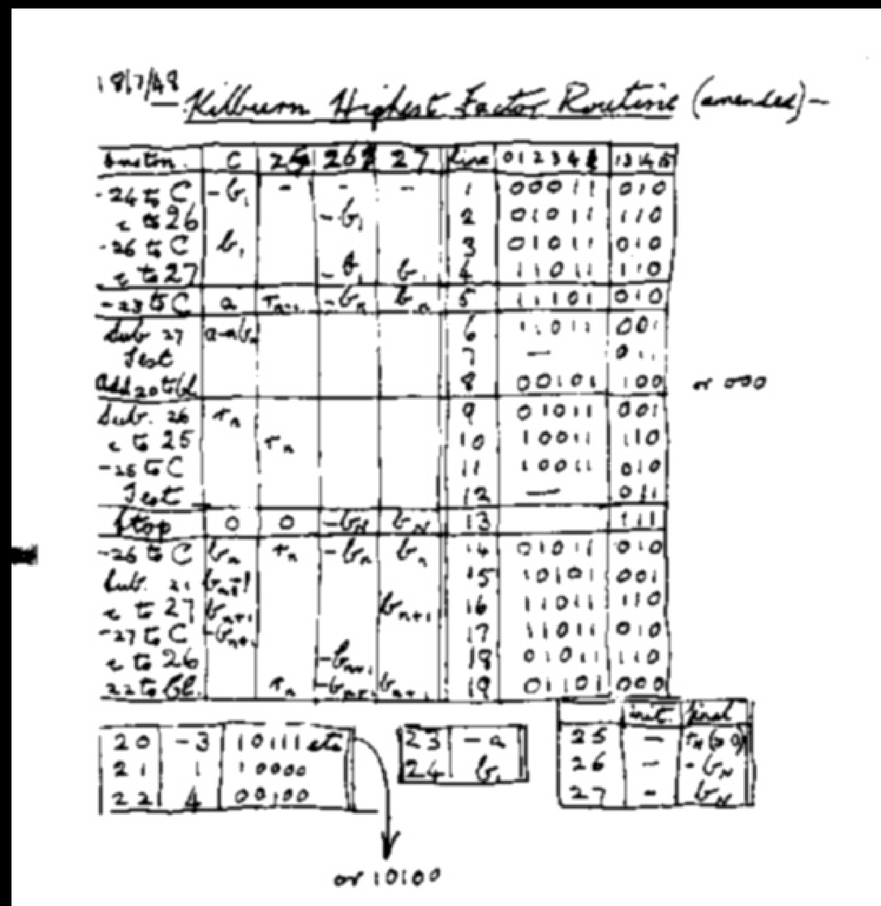
1947, primo baco

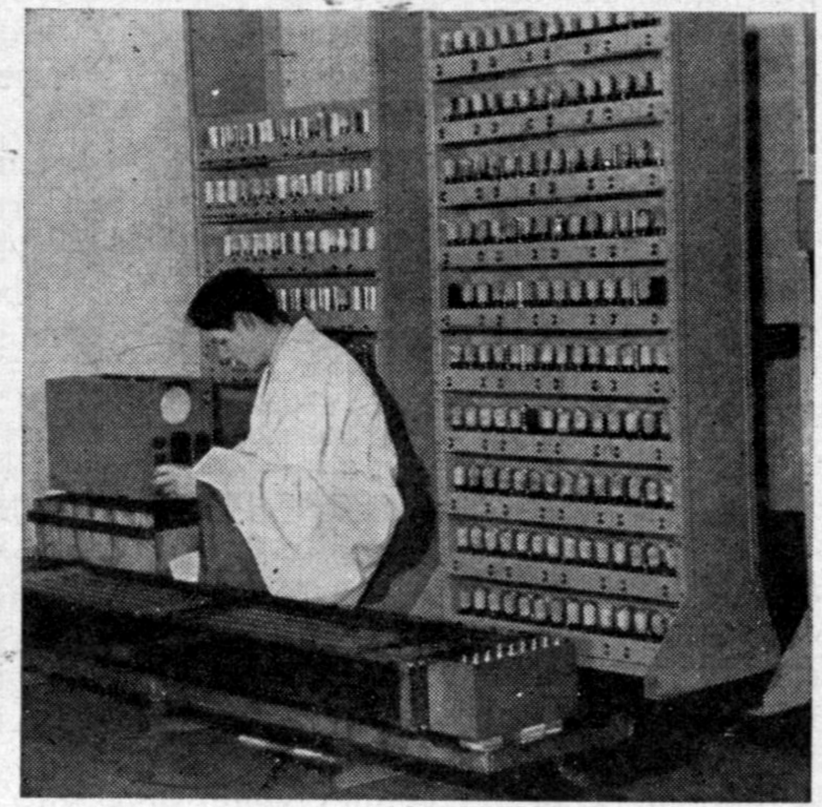


1948, Baby Machine, hw …



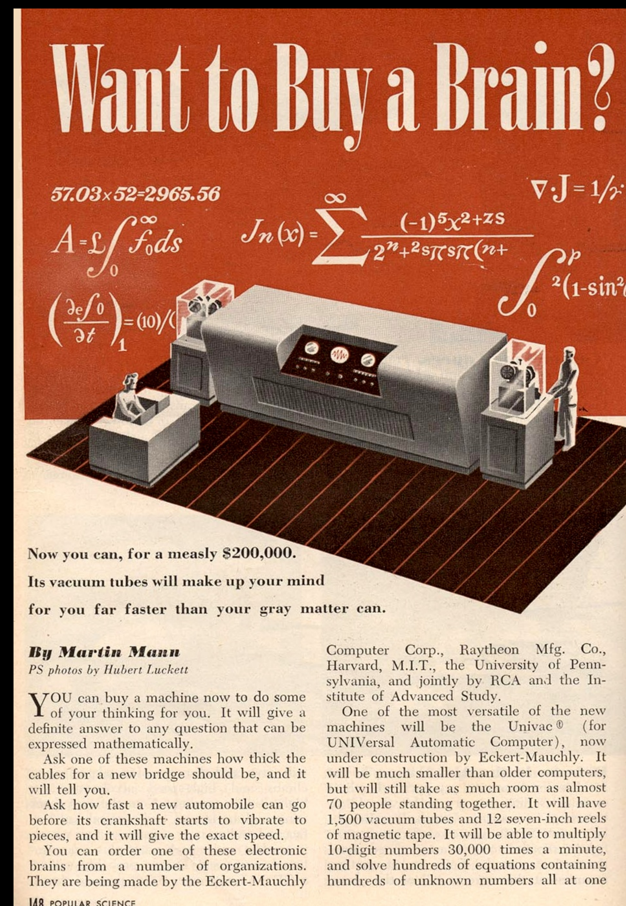
… e software





New Calculating Wizard

1949, Popular Science



Want to Buy a Brain?

Now you can, for a measly $200,000.
Its vacuum tubes will make up your mind
for you far faster than your gray matter can.

By Martin Mann
PS photos by Hubert Luckett

YOU can buy a machine now to do some of your thinking for you. It will give a definite answer to any question that can be expressed mathematically.

Ask one of these machines how thick the cables for a new bridge should be, and it will tell you.

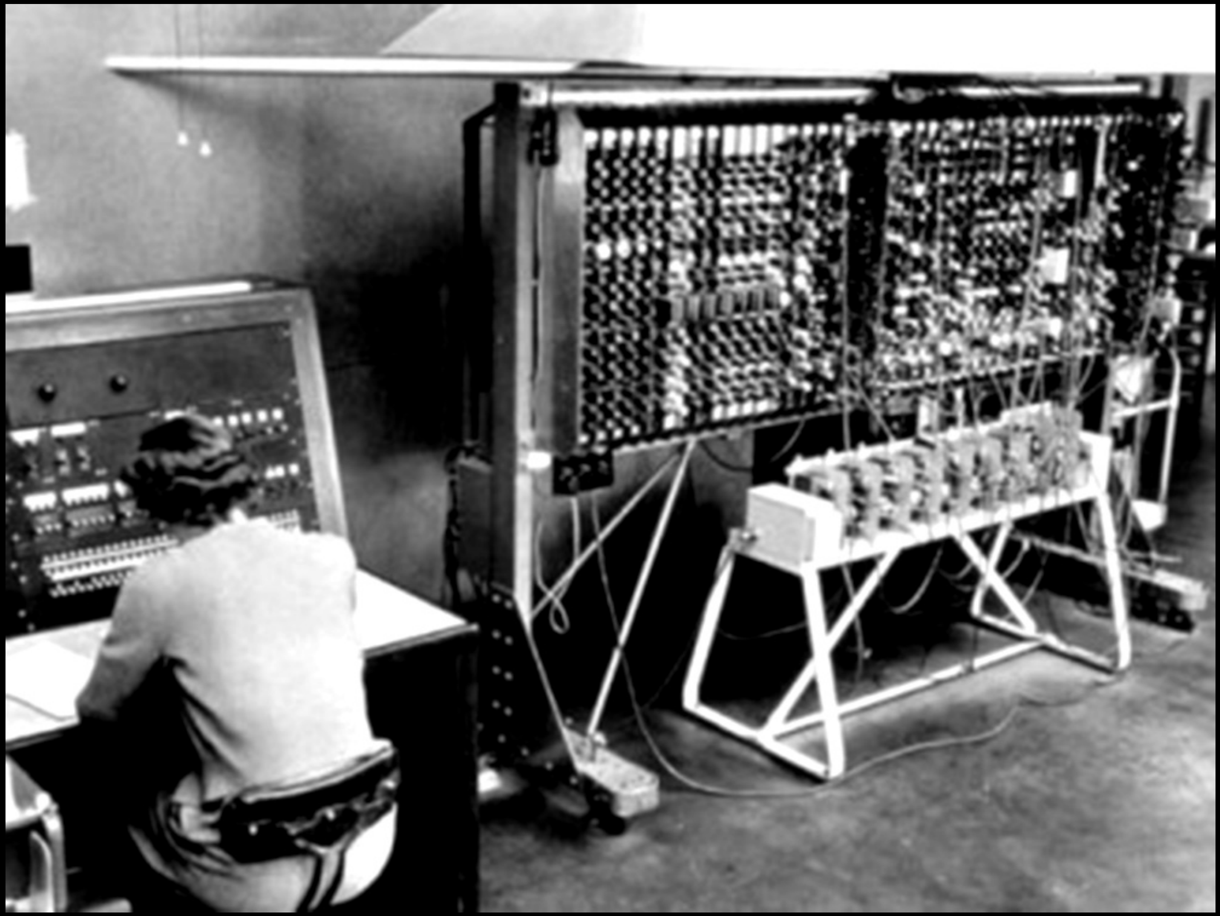
Ask how fast a new automobile can go before its crankshaft starts to vibrate to pieces, and it will give the exact speed.

You can order one of these electronic brains from a number of organizations. They are being made by the Eckert-Mauchly Computer Corp., Raytheon Mfg. Co., Harvard, M.I.T., the University of Pennsylvania, and jointly by RCA and the Institute of Advanced Study.

One of the most versatile of the new machines will be the Univac® (for UNIVersal Automatic Computer), now under construction by Eckert-Mauchly. It will be much smaller than older computers, but will still take as much room as almost 70 people standing together. It will have 1,500 vacuum tubes and 12 seven-inch reels of magnetic tape. It will be able to multiply 10-digit numbers 30,000 times a minute, and solve hundreds of equations containing hundreds of unknown numbers all at one

148 POPULAR SCIENCE

1950, Pilot ACE



1950, test di Turing

MSS. and other Communications for the Editor should be addressed to
Prof. G. RYLE, Magdalen College, Oxford.

VOL. LIX. No. 236. OCTOBER, 1950

MIND

A QUARTERLY REVIEW

OF

PSYCHOLOGY AND PHILOSOPHY

EDITED BY

PROF. GILBERT RYLE

WITH THE CO-OPERATION OF PROF. SIR F. C. BARTLETT AND PROF. C. D. BROAD

CONTENTS.

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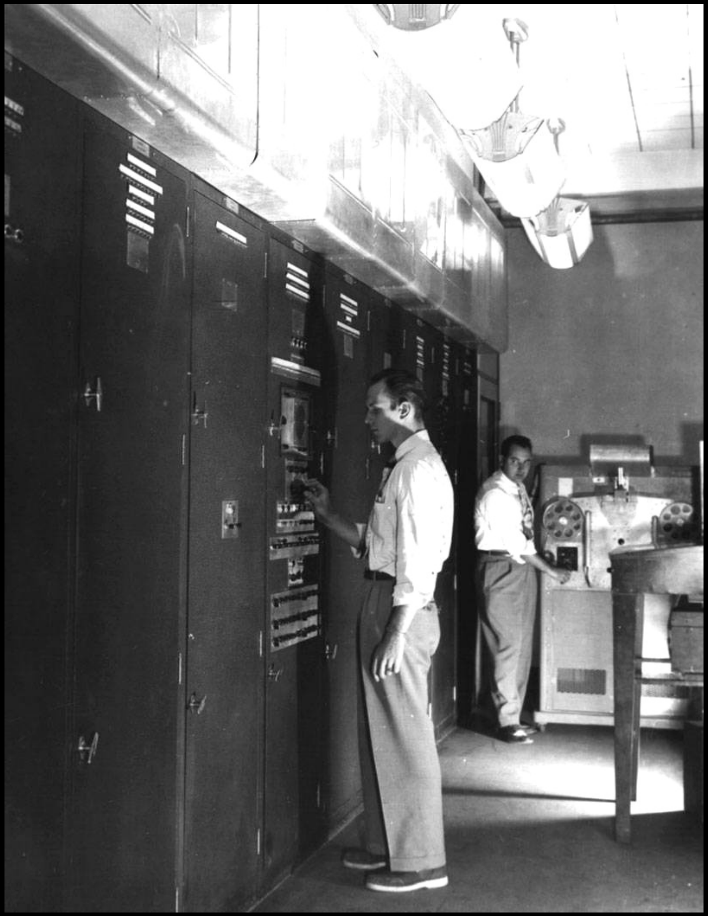
1951, EDVAC



1951, UNIVAC

1951, A0 il primo compilatore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An IBM Electronic Calculator speeds through thousands of intricate computations so quickly that on many complex problems it's like having 150 EXTRA Engineers.
No longer must valuable engineering personnel . . . now in critical shortage . . . spend priceless creative time at routine repetitive figuring.
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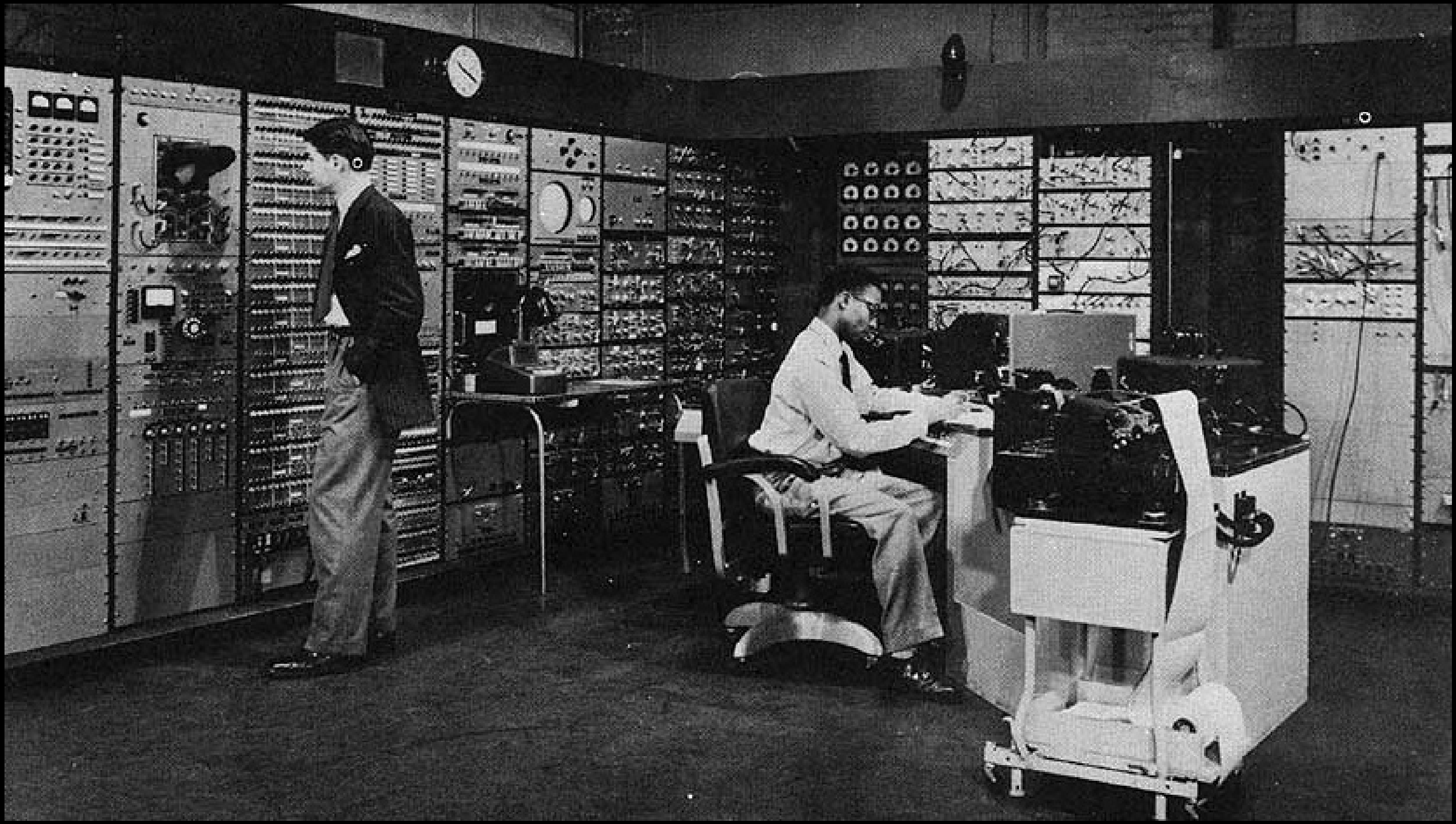
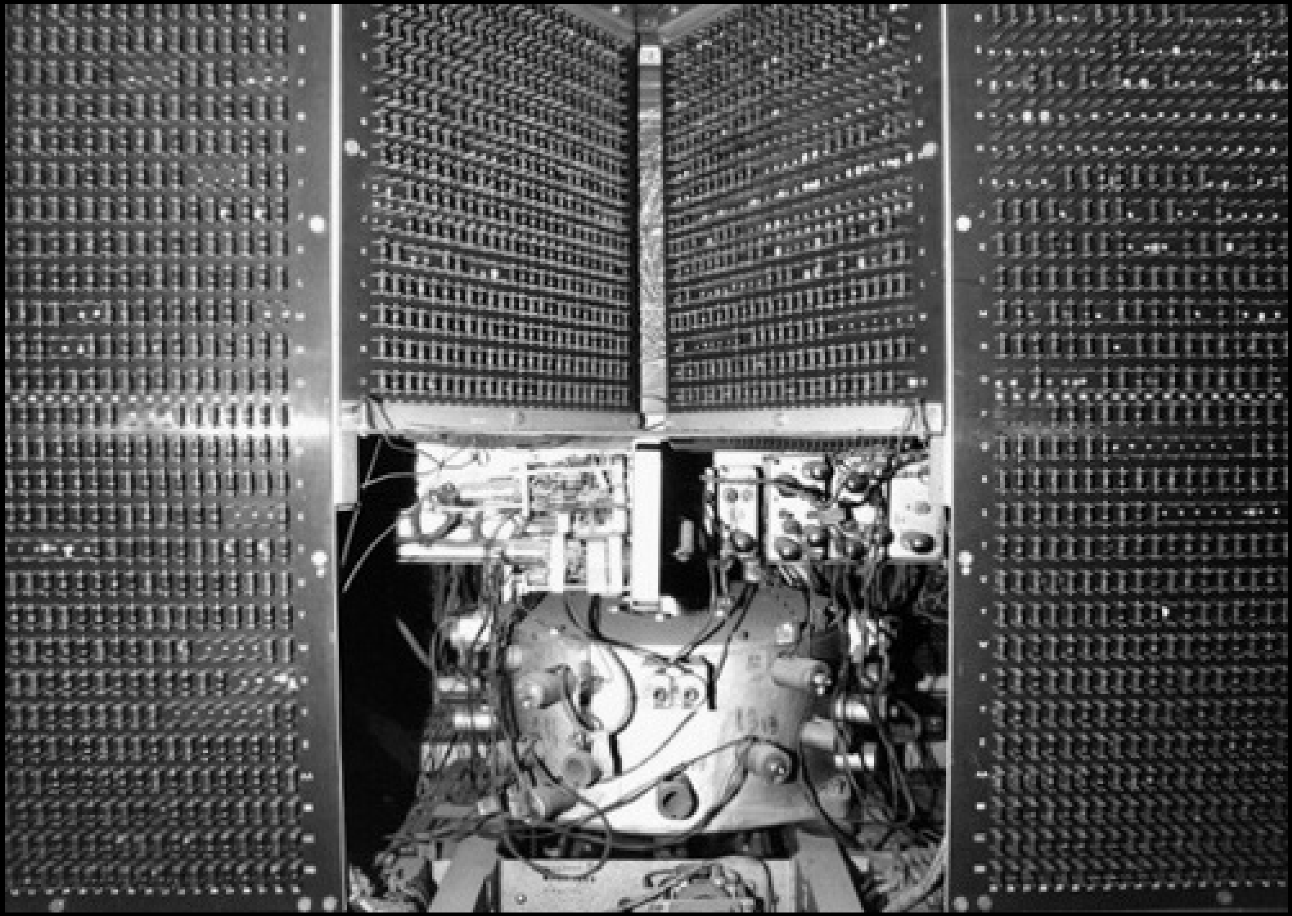
1952, Eisenhower-Stevenson

1953, Whirlwind I al MIT

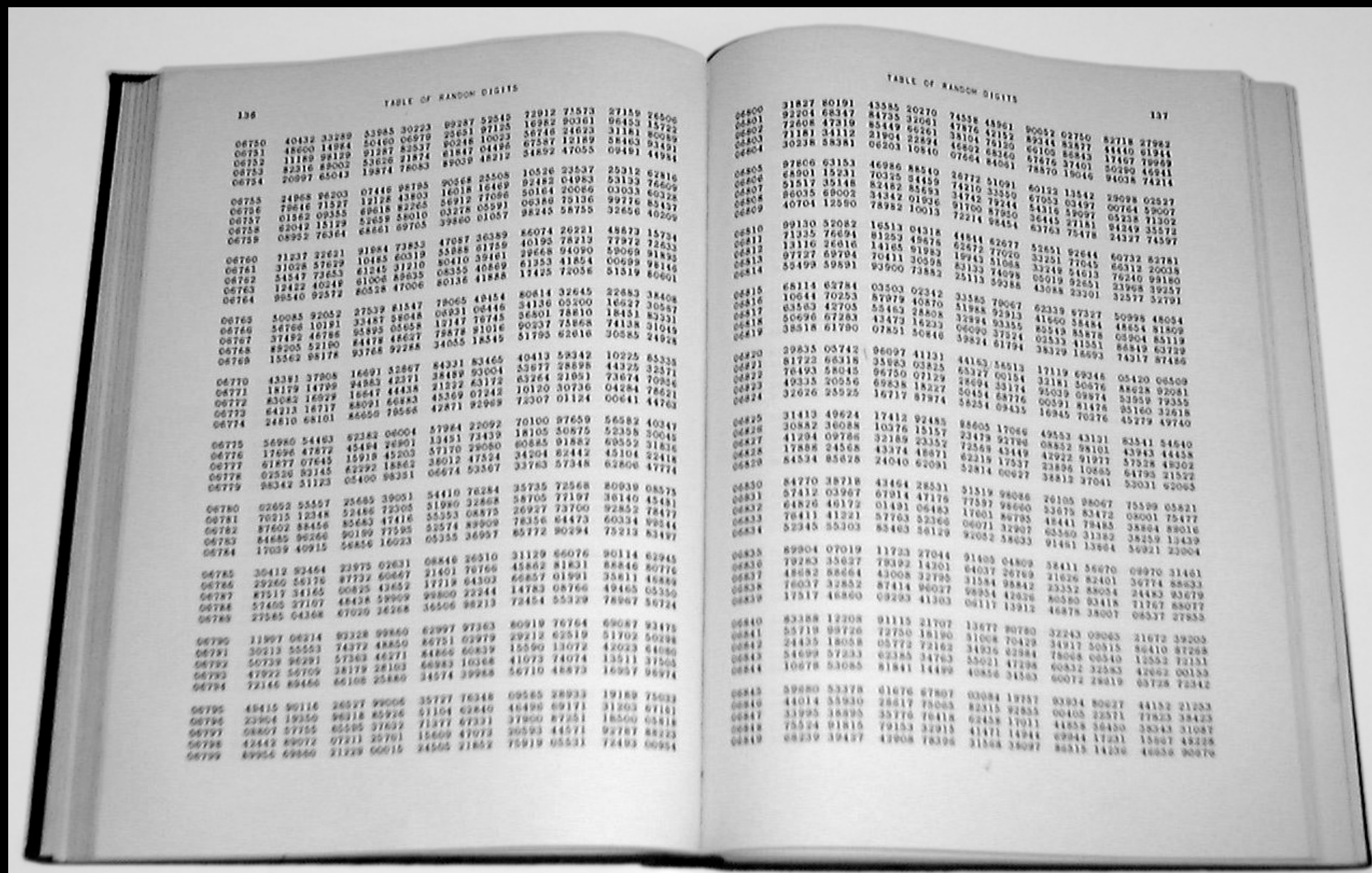


1954, CRC102 a Milano



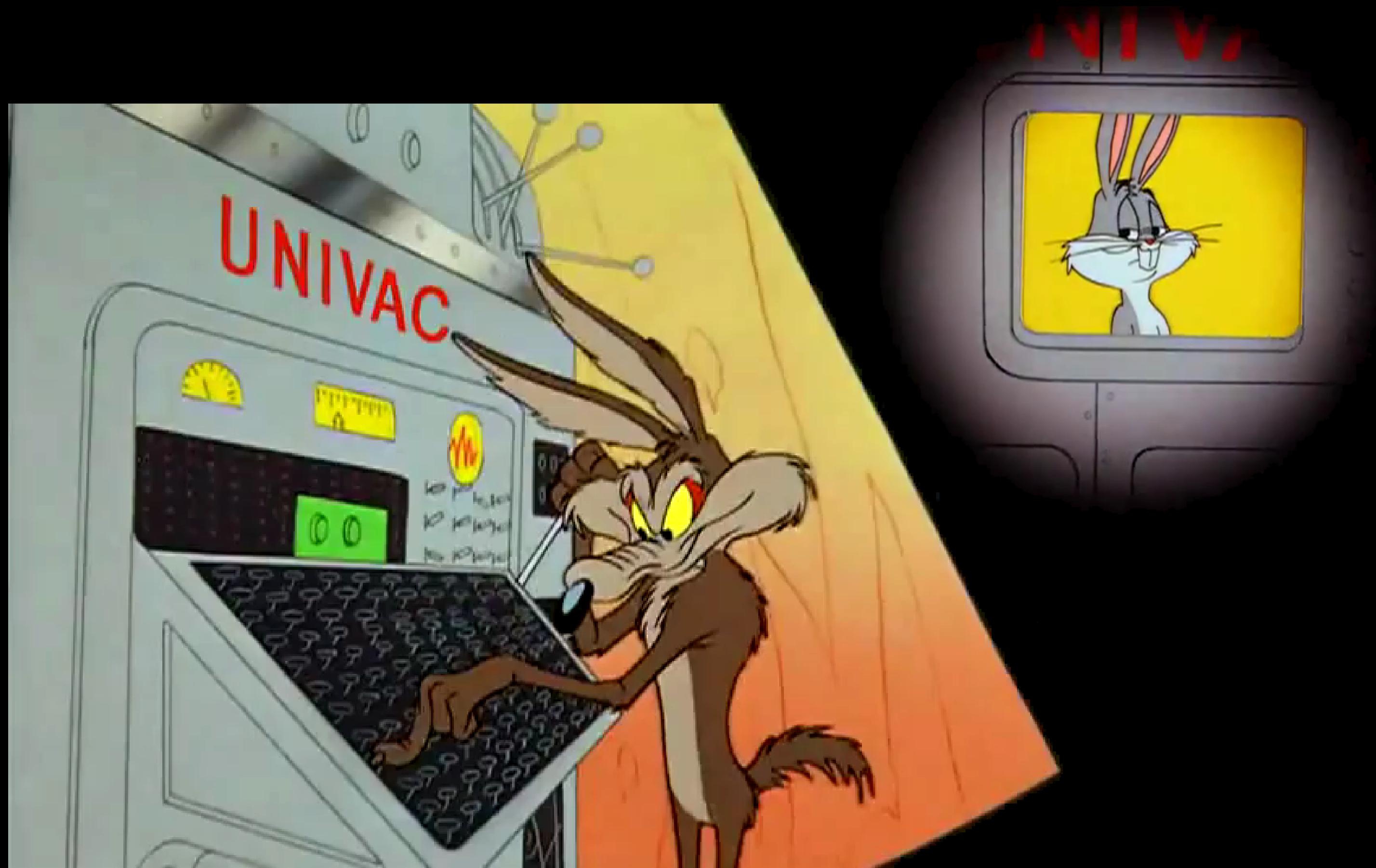
1955, Ferranti MK1 a Roma

1955, A Million Random Digits



1956, Dartmouth: nasce l'AI

1956, To Hare is Human

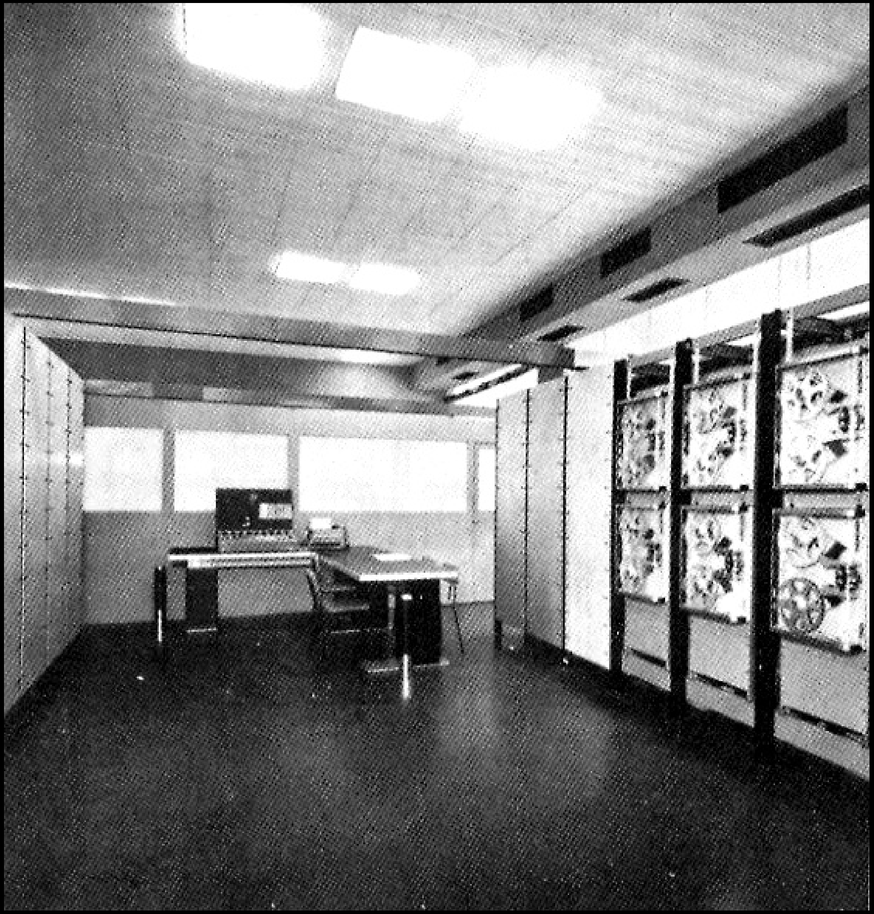


1957, Macchina Ridotta a Pisa

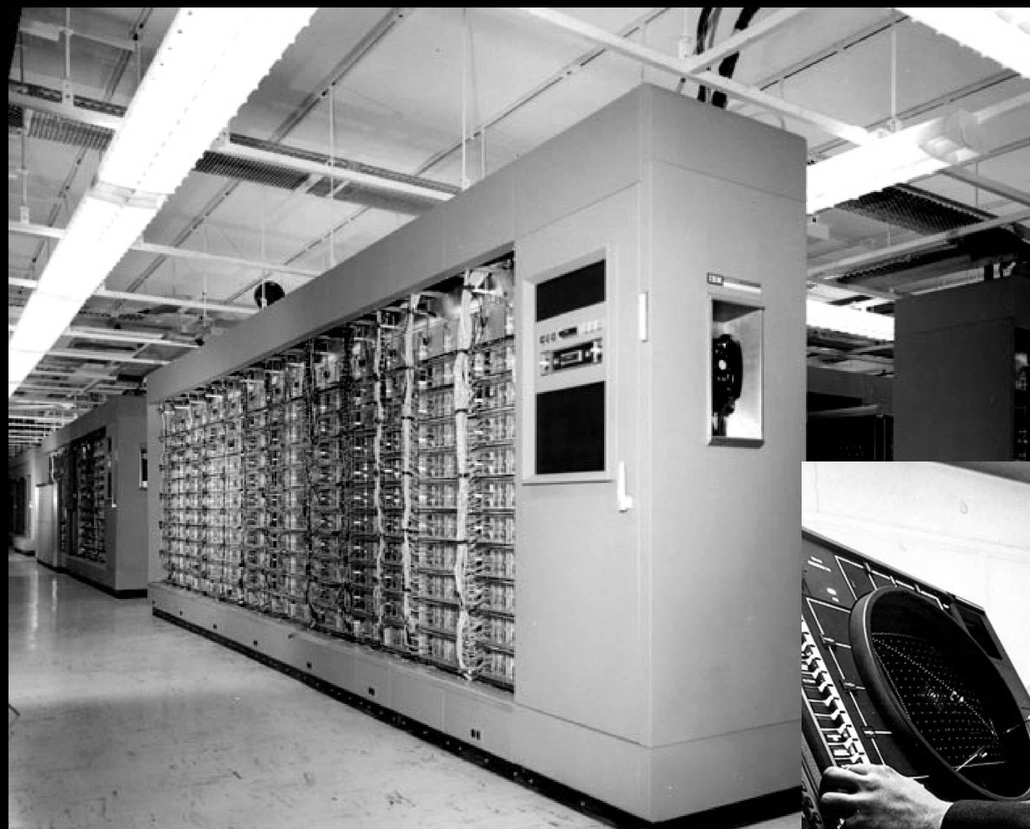
1957, IBM 704: il Fortran

1957, Hollywood

1958, ELEA 9001 a Ivrea

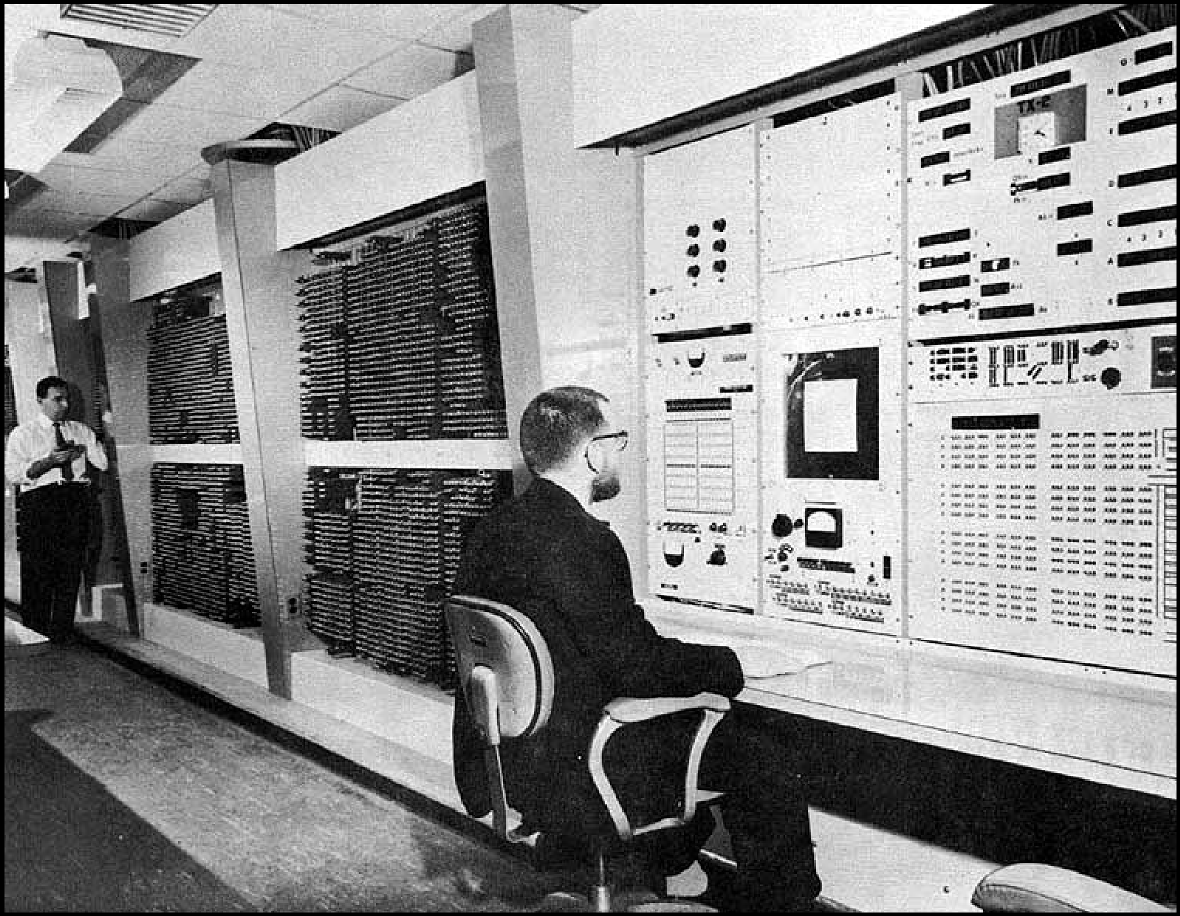


1958, AN/FSQ-7



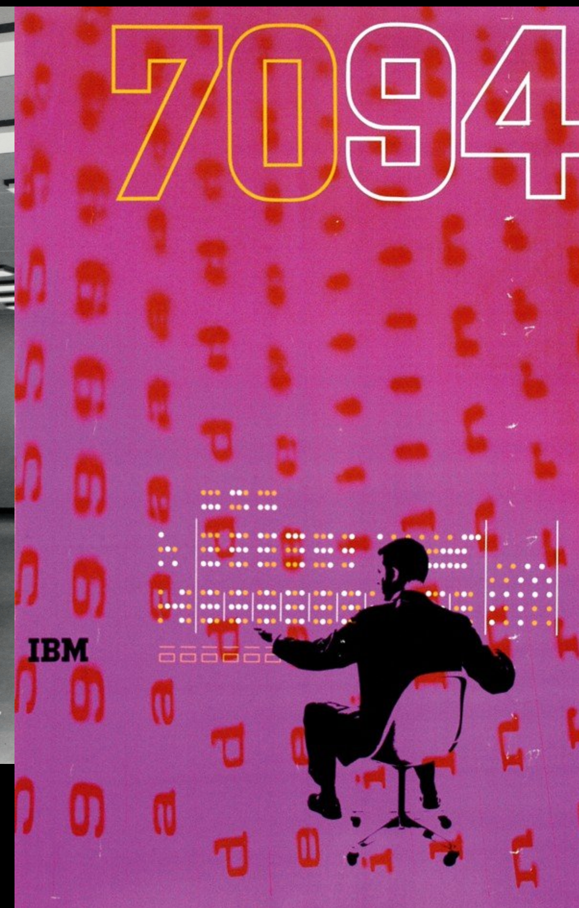
1958, transistor

1958, Lincoln TX-2 al MIT

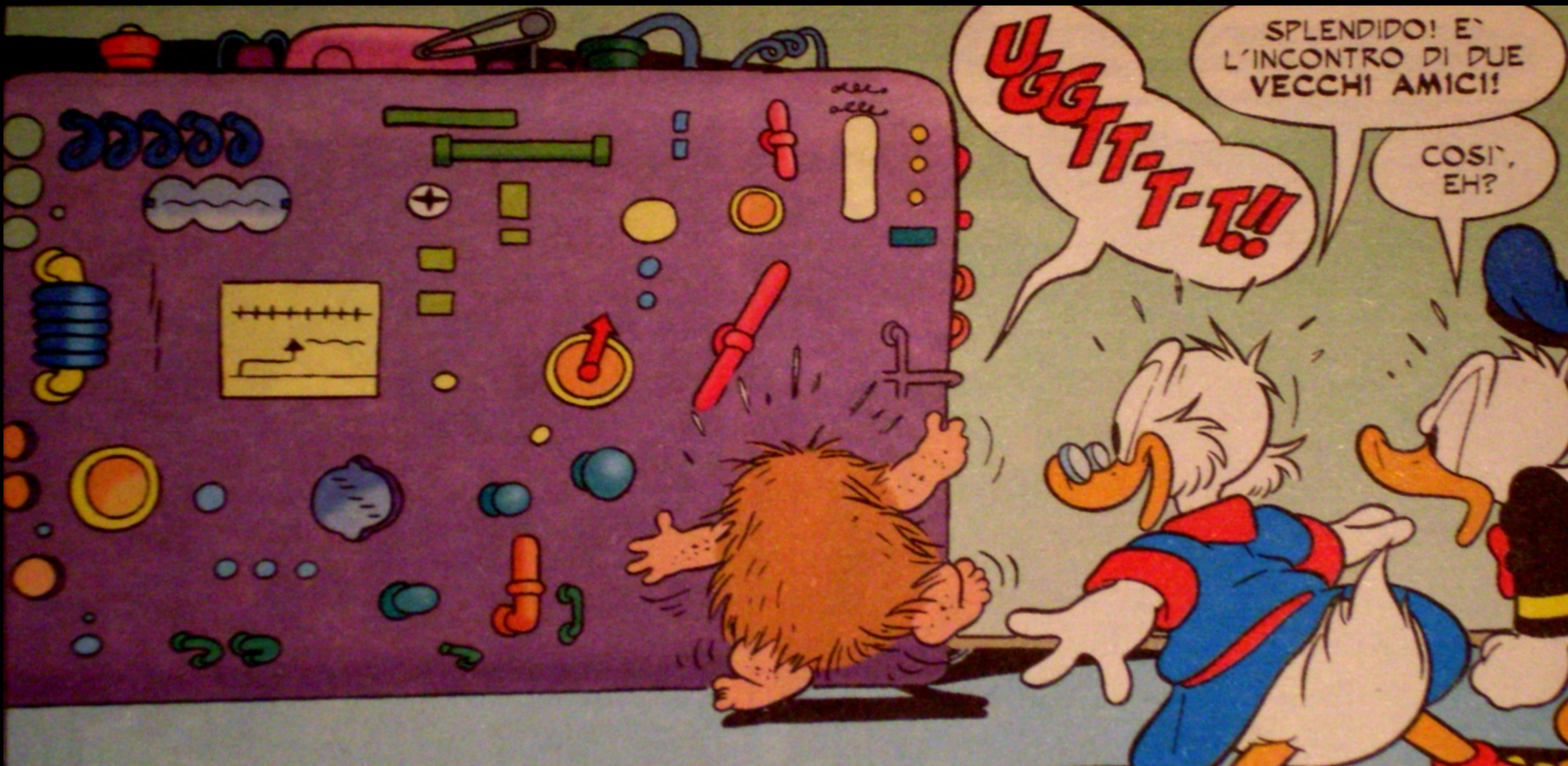


1959, ELEA 9002

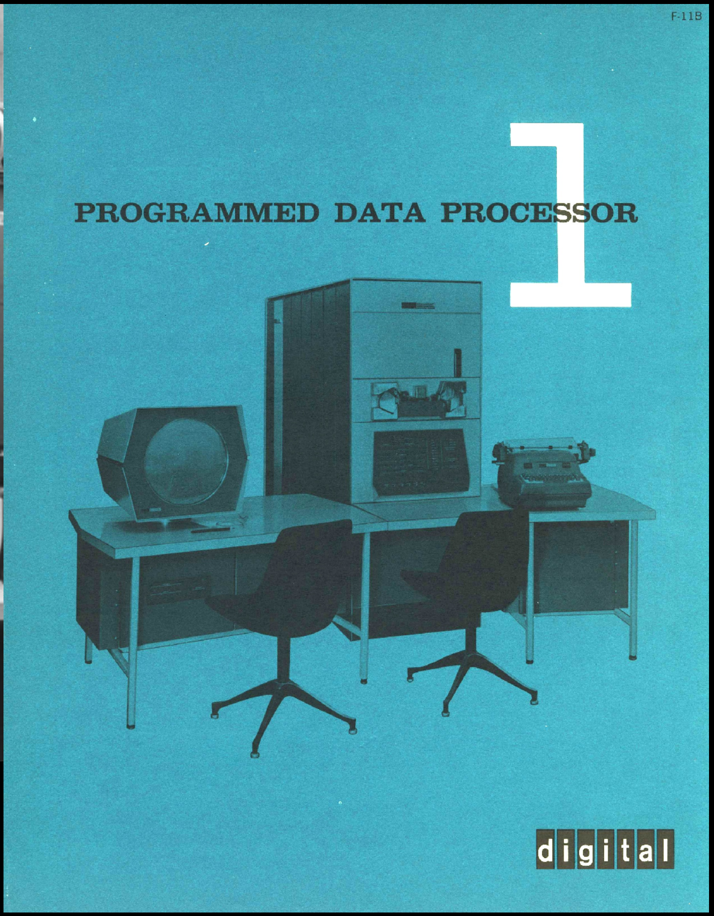
1959, IBM 7090



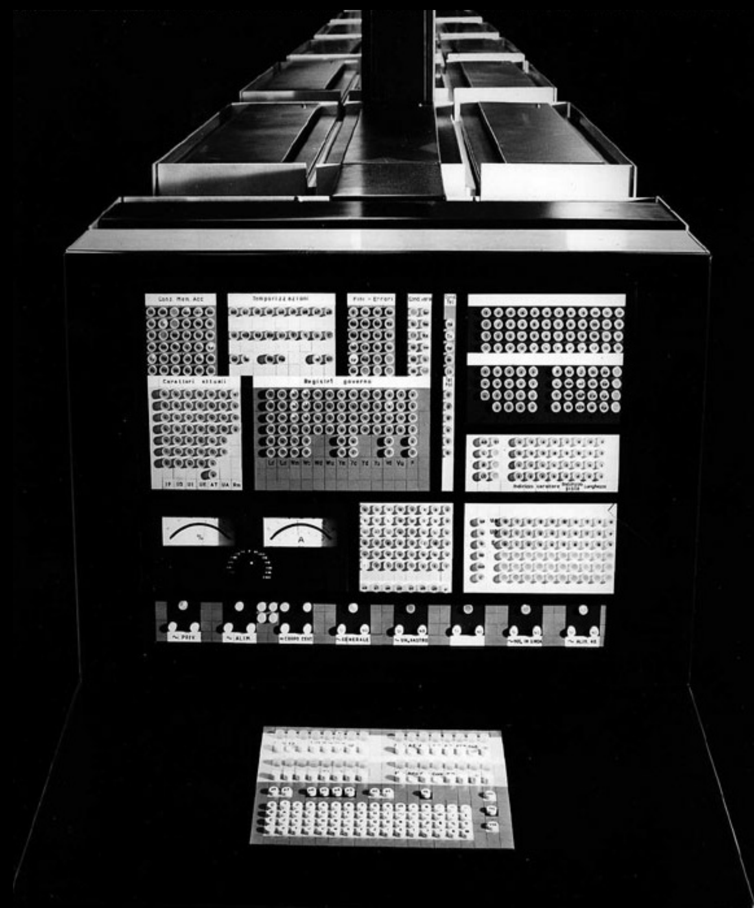
1959, il signor Bunz



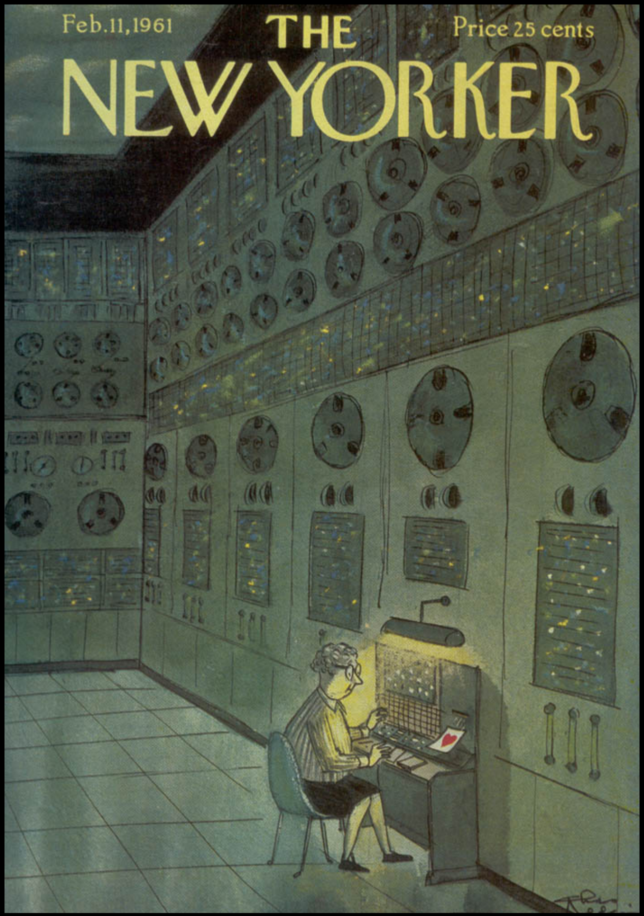
1960, Digital PDP-1



1960, ELEA 9003



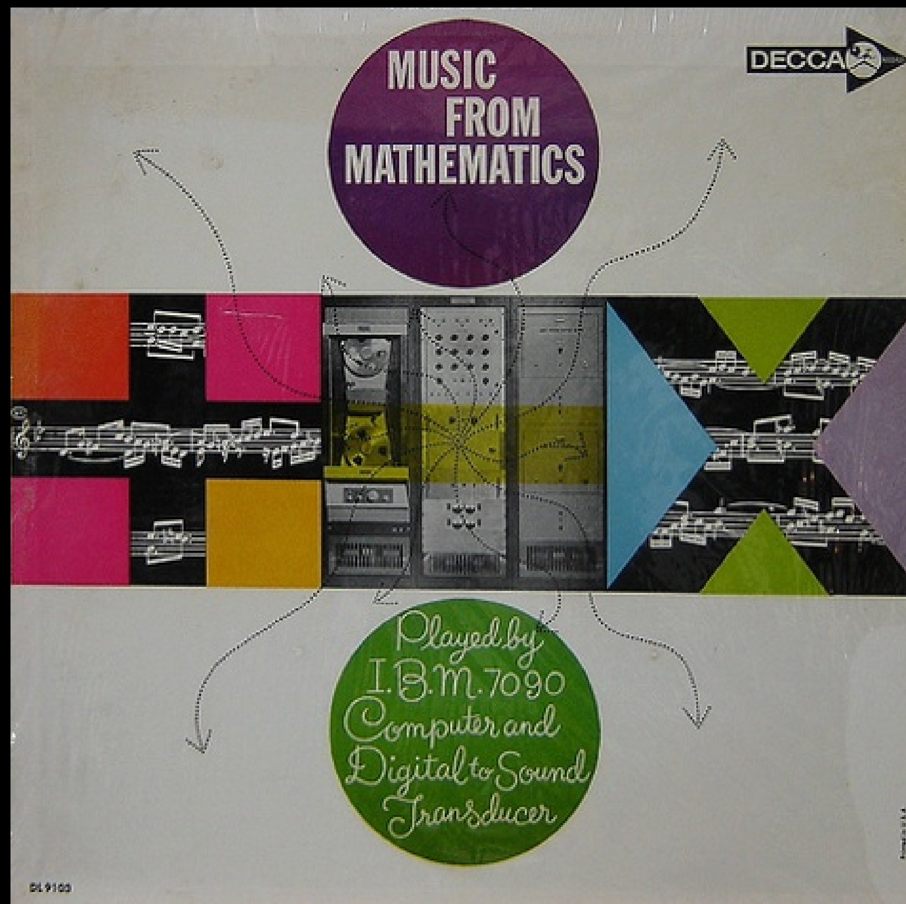
1961, S. Valentino



1961, ELEA 6001

1961, CEP “definitiva” a Pisa

1961, il 7090 canta Daisy Bell



1962, Spacewar!

1963, Sketchpad

1964, Programma 101