

[\[HOME - BASE Cinque - \*Appunti di Matematica ricreativa\*\]](#)

# CHRONOLOGY OF RECREATIONAL MATHEMATICS

by David Singmaster

Chi l'ha inventato per primo

La storia della matematica ricreativa è incredibilmente ricca di materiale. Sebbene il numero di documenti conosciuti aumenti notevolmente soltanto dal 1500 in poi, ci sono fondati indizi che il genere umano non ha mai smesso di giocare con l'ingegno almeno dal 3000 a.C. ad oggi.

Volendo tracciare una breve cronologia di questo fenomeno l'imbarazzo della scelta è forte. Alla fine ho deciso di inserire soltanto problemi e giochi che, sia pur in versioni diverse dall'originale, compaiono in questo sito. Ritengo che tale scelta abbia un duplice vantaggio:

- permette di farsi un'idea concreta dello sviluppo storico della matematica ricreativa, affrontando i vari problemi in prima persona;
- permette di stupirsi scoprendo che certi quesiti ed indovinelli avvincenti, interessanti e freschissimi hanno in realtà un'origine molto più antica di quello che si può immaginare.

La fonte principale di questa cronologia è la "Chronology of recreational mathematics" di David Singmaster, nella versione del 1998.

Un'ultima annotazione. Spesso, di fronte ad una brillante idea, viene da chiedersi: chi l'ha avuta per primo

Nel nostro caso non è sempre facile rispondere.

Lo stesso Singmaster afferma che quando lui dice "primo" intende "primo, che io sappia".

## **CHRONOLOGY OF RECREATIONAL MATHEMATICS by David Singmaster**

Last revised on 4 agosto 1996.

This includes relevant history texts and all items in the Sections: Abbreviations; Common References; Some Other Recurring References; 2; 3.A and many items in 3.B of my Sources in Recreational Mathematics. Names of problems are generally those used in my Sources, or close approximations thereto.

Note that 'first' means 'first known (to me)'.

In Greek mythology, Palamedes was the inventor of dice.

-2700 Carved Stone Balls show all regular polyhedra and cubo-octahedron.

-2300 Geometric progressions on tablets from Nippur.

-1800 Old Babylonian tablet - first Sliding Spear.

-1700 Phoenician Puzzle Jugs in Cyprus.

-1650 Rhind Papyrus - our main source for Egyptian Fractions, a kind of St. Ives Problem.

-1400 Early Morris boards at Kurna, Egypt.

-1200 Sophocles claimed dice were invented by Palamedes during the siege of Troy. Herodotus attributed them to the Lydians in the reign of Atys.

- 650 Shu Ching - first mention of the Lo Shu (River Plan) which may refer to the magic square of order 3.
- c-500 Confucius (= K'ung Fu-Tzu): Analects XVII,xxii - perhaps the earliest reference to the game of go.
- 500 Lun Yu - mentions the River Map.
- c-450 Pingala uses Fibonacci numbers in the study of prosody. (Date uncertain - cf -200.)
- 340 Aristotle (attrib.): Mechanical Problems - Aristotle's Wheel Paradox.
- 330 Eubulides - first Liar Paradox and other logical paradoxes: The Heap; Have You Stopped Beating Your Wife
- 325 Euclid - first Ass and Mule Problem.
- 300 Ta Chuan - gives an association of numbers and concepts which led to an identification with the River Plan, but this may be spurious.
- 300 Chang Tzu mentions the Lo Shu.
- c-300 Meng Tzu (= Mencius): Works IV, ix refers to the game of go as well-developed. Cf -500.
- c-300 Demotic Mathematical Papyri.
- 285 Philetas of Cos - died from considering Liar Paradox.
- c-280 The Stoics invent The Crocodile and Baby Paradox.
- 200 Archimedes - first description of the Locus of Archimedes; first Archimedean Polyhedra; first Volume of Intersection of Two Cylinders; first Archimedes' Cattle Problem.
- c-200 Pingala describes Pascal's Triangle. (Date uncertain - cf -450.)
- c-150 Chiu Chang Suan Shu - first Cistern Problem; first Men Buy a Horse; first Overtaking and Meeting Problems, including first Hound and Hare; first Broken Bamboo.
- 50 Roman Lex Falcidia leads to inheritance problems, particularly Posthumous Twins Problem.
- 19 Virgil: Aeneid - mentions isoperimetry.
- 1 & 10 Ovid mentions a game thought to be a form of Three Men's Morris.
- 50 St. Paul: Epistle to Titus I, 12 - mentions All Cretans Are Liars.
- 75 Celsus - first example of Posthumous Twins Problem.
- 80 Josephus: De Bello Judaico.
- 80 Ta Tai Li Chi - first clear reference to a Magic Square.
- 1C Nagarjuna - first order 4 Magic Square, in India.
- 100 Nicomachus: Introduction to Arithmetic.
- 130 Theon of Smyrna: Biblion ... - natural square often erroneously cited as magic.
- c150 Heron: Peri Metron - Cistern Problem; Aristotle's Wheel Paradox.
- 190 Xu Yiu (= Hsu Yo = Xu Yue): Shu Shu Ji Yi (= Shu Shu Chi I) (Memoir on Some Traditions of Mathematical Art) - first description of order 3 Magic Square. However, current belief is that this text was written by Zhu Luan (= Shuzun) of c570.
- 200 LCE KCE.
- c220 Legendary invention of the Chinese Rings by Hung Ming.
- c250 Diophantos: Arithmetica - first Each Doubles Others' Money; first Men Find a Purse.
- 280 Sun Tzu: Sun Tzu Suan Ching - first Chinese Remainder Problem; first Conjunction of Planets.

- 290 Pappus: Collection - describes Archimedean polyhedra.
- 325 Iamblichus: On Nicomachus's Introduction to Arithmetic - first mention of Casting Out Nines; first description of the Bloom of Thymarides; first Amicable Numbers.
- 450 Proclus: A Commentary on the First Book of Euclid's Elements - first Lines Approaching but not Meeting.
- 468 Chang Ch'iu-Chin [= Zhang Qiujian]: Chang Chhiu-Chien Suan Ching [= Zhang Qiujian Suan Jing] - first 100 Fowls Problem.
- 499 Aryabhata I: Aryabhatiya - first general solution of  $ax - by = c$ .
- c500 Invention of chess, probably in northwest India.
- 5-6C Chinese culture is transmitted via Korea to Japan, probably including the games of go, shogi (oriental chess) and backgammon.
- 505 Varahamihira II: Brhatsamhita.
- c510 Metrodorus, ed.: Greek Anthology.
- c550 Chess reaches Persia.
- 628 Brahmagupta: Brahma-sphuta-siddhanta.
- 629 Bhaskara I: Laghu-Bhaskariya, a commentary on the Aryabhatiya.
- c640 Ananias of Shirak: Arithmetical Problems.
- 7C The Game of Promotion - a Chinese version of Snakes and Ladders.
- c7C Bakhshali Manuscript - 100 Fowls Problem; first Present of Gems; first Dishonest Butler; first Snail Climbing out of Well.
- 780 Jabir ibn Hayyan.
- c800 Possible Irish origin of the Josephus Problem with 15 and 15 soldiers, led by Black and White. The earliest MS versions are 9C. Verse mnemonics already exist by mid 12C.
- c800 Alcuin: Propositiones ad Acuendos Juvenes - first River Crossing Problems (3 types); first Explorer's Problem; first Division of Casks; first Applesellers' Problem; first Collecting Stones; unusual solution of Posthumous Twins Problem; first Three Odds Make an Even; first Strange Families.
- 802 Earliest Byzantine reference to chess.
- c820 al-Khwarizmi. Untitled Latin MS of 13C known as Algorismus or Arithmetic.
- c840 al-Adli - earliest known chess master.
- 850 Mahavira: Ganita-sara-sangraha - first 100 Fowls Problem with four types; first Monkey and Coconuts Problem; first Selling Different Amounts at the Same Prices; first Sharing Cost of Stairs.
- 860 Chaturveda: Commentary on Brahmagupta.
- 875 Thabit ibn Qurra.
- c875 al-Ya`q-bi - first Chessboard Problem.
- c890 Rudrata: K\_vy\_lank\_ra - first Knight's Paths.
- c900 Abu Kamil: Book of Rare Things in the Art of Calculation - first 100 Fowls Problem with five types.
- c900 Sridhara: Patiganita.
- 913 Oldest known Japanese book on go: Go Shiki (The Rules of Go).
- c920 as-Suli - early chess master.
- 943 el-Masudi: Meadows of Gold - first Chessboard Problem.
- 950 Aryabhata II.
- 10C Europeans learn chess from north Africa, probably via Moorish Spain. The word 'mate' is recorded in Latin before 1000.
- 969 Emperor Mu-tsung is reported to have played cards with his wives - the

earliest reference to playing cards. However, it is evident that these were the 'domino' cards still in use in China. Cf. 1120.

c980 al-B\_zaj\_n\_: Arithmetic - first Lazy Worker.

c983 Ikhw\_n al-Saf\_': Ras\_'il (Encyclopedia) - first examples of order 5 and 6 Magic Squares.

c1000 Beginning of Rithmomachia.

c1000 Chain Code used as mnemonic in Sanskrit poetry.

1000 al-Biruni.

1000 Ibn al-Haitham.

1010 Earliest European mention of chess - the Count of Urgel (in Spain) leaves his rock crystal chess set to a convent. By 1200, the game has spread over most of Europe, reaching as far as Iceland, the Baltic and Bohemia.

c1010 al-Karkhi (= al-Karagi): Alfakhri - first Robbing and Restoring; Lazy Worker.

1020 Avicenna.

11C False dice, with two ones, were made.

c1060 Shao Yung: Fu-Hsi diagram - first diagram of the 64 I-Ching hexagrams in binary order.

1061 First known mention of chess in Italy - a cardinal complains to Pope Alexander II about a Florentine bishop who spent most of a night playing chess.

c1075 Tabar\_: Mift\_h al-mu`\_mal\_t - first Use of 1,3,9,... as Weights.

1100 al-Ghazzali.

1120 Emperor Suen-ho has playing cards made for his wives - probably the Chinese 'domino' cards. Cf 969. They are also recorded in 12C Arabia (I've forgotten this source - it may refer to the following facts). There is a fragment of a 12 or 13 C card and an almost complete early 15C deck from Egypt which show that the 52 card deck came to Europe from Egypt (or thereabouts). Indian cards and games are such that it is conjectured that cards originated in Persia or central Asia and that the Arabic/Egyptian and Indian forms are derived from a common ancestor rather than one from the other. John Scarne says there is an 11C card from Chinese Turkestan.

c1140 The Josephus Problem is said to have been in a lost work of Michinori Fujiwara.

1141 Abu Ishaq: first recorded Arabic Knight's tour, possibly due to al-Adli or as-Suli.

1150 Bhaskara II: Liliwati & Bijaganita.

1150 ibn Ezra. Various works, including a poem about chess.

Late 12C Gretti's Saga mentions Fox and Geese.

1193 Eustanthius, Archbishop of Thessalonica, says dice should have opposite sides adding to 7 to prevent cheating.

c1200 Latin squares used on amulets in medieval Islamic world.

1200 al-Buni.

1202 Fibonacci: Liber Abaci - first Western appearance of Fibonacci Numbers; first Use of 1,2,4,... as Weights; first Western version of Selling Different Amounts at the Same Prices; first If A is B, What is C; first Divination of a Permutation; first Well Between Two Towers; first algorithm for expanding into Egyptian Fractions; first inheritance with ith getting  $1 + 1/7$  of the rest and all getting the same amount; first Sharing Unequal Resources; first use of 1,2,4,8... to pay rent.

- 1225 Fibonacci: Flos; Epistola.
- 1228 Fibonacci: Liber Abaci, 2nd ed.
- c1240 Abbot Albert, in Annales Stadenses - first Jug Problem.
- c1240 Maze laid in Chartres Cathedral.
- 1247 Ch'in Chiu Shao: Shu Shu Chiu Chang (Mathematical Treatise in Nine Sections) - first complete analysis of the Chinese Remainder Problem.
- 1250 al-Lubbudi.
- 1253 Earliest recorded Japanese game of go, supposedly played between Nichiren (founder of the Nichiren sect of Buddhism) and a 9-year old disciple named Nisshomaru.
- 1256 Ibn Khallikan.
- c1260 al-Qazwini: (Kitab) `Aja'ib al-Makhl-qat wa Ghara'ib al-Mawj-dat ((The Book of the) Wonders of the Creation and Unique [Phenomena] of the Existence = Prodigies of Things Created and Miraculous Aspects of Things Existing = The Cosmography) - first Man Digging a Well and Stopping Short.
- c1275 Jacobus de Cessolis's sermon based on chess is one of the first works on chess. It was one of the first books published by Caxton in 1475.
- 1275 Yang Hui - preserves various Magic Squares; first Magic Circles.
- c1275 Nicholas de St. Nicholai (attrib.): Bonus Socius collection of chess problems.
- c1275 Oldest extant MS of Fibonacci - L.IV.20 in Siena.
- 1283 The Spanish Treatise on Chess-Play (the Alfonso MS) produced for Alfonso X of Castile.
- c1305 Byzantinisches Rechenbuch (BR).
- 1315 Moschopoulos - first Western discussion of Magic Squares.
- 1327 Gherardi: Libro di ragioni; Liber habaci.
- c1350 Munich 14684. (Possibly 13C.)
- c1350 Oresme first considers Date Line Problem.
- 14C Japanese Binary Divination is said to date to this time.
- 1356 N\_r\_yana Pandita: Ganita-kaumud\_.
- c1370 Columbia Algorism - first Snail Climbing Out of Well with end effect.
- c1370 Shihabaddin Ab-'l-'Abbas Ahmad ibn Yahya ibn Abi Hajala at-Tilimsani alH-anbali: Kitab 'anm-dhaj al-qital fi la`b ash-shatranj (Book of the examples of warfare in the game of chess) - first Blind Abbess and Her Nuns.
- c1370 dell'Abbaco(): Trattato d'Aritmetica - first Snail Climbing Out of Well with end effect.
- 1371 First mention of playing cards in Europe, in a Catalan document in Spain, where cards are called 'naip'. (But I have a source that says cards were mentioned in 1275, that they are mentioned in German MSS of 1286 to 1384 and were used in Italy in 1299.)
- 1377 First (allegorical) description of playing cards in Europe, in a Swiss MS by John of Rheinfelden, describing a deck of 52 cards - the original MS is lost and the oldest version is a 1429 copy. Within a short time, they are widespread in Europe, but they are not mentioned in several lists of games of the previous decade. They are also not mentioned in the general literature before this time, even by authors such as Petrarch, Boccaccio and Chaucer with an interest in games. A Paris ordinance regulating gaming in 1369 makes no mention of cards, but the equivalent ordinance of 1377 mentions them. By 1380, cards are recorded in Florence, Basel, Regensburg, Brabant, Paris and Barcelona, and

several of the records describe cards as new or having arrived this year.

1380 Problem of Points in Italian MS.

c1390 Lucca 1754 - notes a circumference increases by  $44/7$  times the increase in the radius.

1392 Three packs of cards made for Charles VI of France.

15C First association of Magic Squares with planets.

c1450 Civis Bononiae collection of chess problems formed.

c1450 Gerhardt(): Algorismus Ratisbonensis (AR) - first Horseshoe Problem.

c1450 Tarot cards added to the card deck.

1460 Benedetto da Firenze.

1478 Treviso Arithmetic.

1478 Muscarello: Algorismus.

c1480 P. M. Calandri: Tractato d'Abbacho.

1483 Wagner(): Bamburger Rechenbuch.

1484 Pietro Borghi: Arithmetica.

1484 Chuquet: Triparty - gives inheritance problems of the form  $i$  gets  $i + 1/7$  of the rest which lead to fractional numbers of children.

1488 HB.XI.22.

1489 Widman: Beh\_ude und hubsche Rechnung.

1491 Calandri: Arithmetica - printed arithmetic, first with printed illustrations.

1493 Kalendrier des Bergers - Date Line Problem.

1494 Luca Pacioli: Summa de Arithmetica - first printed version of Problem of Points.

c1500 Calandri: Aritmetica; Una Raccolta di Ragioni.

1500 Pacioli: De Viribus - first One Pile Game; first Binary Divination; first European Blind Abbess and Her Nuns; first Rearrangement on a Cross; first River Crossing with bigger boats; Explorer's Problems.

1503,1534 References to a possible Nim-type game.

1513 Blasius: Liber Arithmetice ....

1514 Durer: Melancholia - famous Magic Square.

1514 Kobel.

1521 Ghaligai: Practica D'Arithmetica.

1522 Riese: Rechnung auff der Linien und Federn.

1522 Tonstall; De Arte Supputandi - the first arithmetic printed in England.

1524 Riese: Die Coss.

nearly 16C First connection of Fibonacci numbers with  $j$ .

1525 Riese: Rechnung nach der lenge.

1525 Durer: Unterweysung der Messung ... - first Nets of Polyhedra.

1526 Rudolff: Kunstliche rechnung ... - first Clock Striking.

1539 Cardan: Practica Arithmetice Generalis - first connection of Josephus Problem with Josephus.

1540 Gemma Frisius.

1541 Rocha: Libro Dabaco.

1544 Stifel.

1545 Serlino: Libro Primo d'Architettura - first Vanishing Area.

1545 Cardan: Ars Magna.

1546 Tartaglia: Quesiti.

1546 Cataneo: Le Practiche.

1550 Cardan: De Subtilitate - first European publication of Chinese Rings; first

False Balance.

1556 Tartaglia: General Trattato - first River Crossing with four couples; first Two Fathers and Two Sons Make Only Three People.

1557 Cardan: De Rerum Varietate - first Staircase Cut; Nets of Polyhedra; first Loop Puzzle (Alliance or Victoria Puzzle).

1559 Buteo: Logistica.

1561 Ruy Lopez: Libro de la Invencion liberal y Arte del Juego del Axedrez.

1566 Trenchant: L'Arithmetique.

1568 Jamnitzer: De Perspective Corporum regularum - first Great Dodecahedron.

1562 Baker: The Well Spring of Sciences.

1571 Gori: Libro di Arimetricha.

1578 Champenois: Les Institutions.

1582 Wecker: De Secretis Libri XVII.

1583 Clavius: Epitome Arithmetica Practica.

1598 First go tournament in Japan, sponsored by Toyotomi Hideyoshi.

1597 or 1599 Palomino: Liber de mutatione aeris ....

c1604 Harriot discovers Binary Arithmetic but does not publish it.

1605 Cervantes: Don Quixote - gives Sentinel Paradox.

1603/1615 Tokugawa Ieyasu unites Japan under his rule as Shogun. The Shogunate lasts until 1868. He systematises the games of go and shogi by establishing bureaus to regulate the game and provide semi-hereditary houses of professional players.

1650 Bacon's 5-bit binary code.

1608 Clavius: Algebra.

c1610 Shakespeare: Midsummer Night's Dream - mentions Nine Men's Morris.

1611 Kepler: The Six-Cornered Snowflake.

1612 Bachet: Problemes, 1st ed. - first Divination of a Pair of Cards from its Rows.

1617 Napier: Rabdologia - first publication of Binary Arithmetic.

1619 Kepler: Harmonices Mundi - first systematic presentation of Archimedean Polyhedra and Tessellations; first finds the two stellated dodecahedra and the rhombic dodeca- and triaconta- hedron.

1624 Bachet: Problemes, 2nd ed.

1624 van Etten: Recreation Mathematique - first Pigeonhole Recreation; first Silhouette Problems; first Trick Purse.

1628 Ens: Thaumaturgus Mathematicus is a Latin edition of van Etten and Alcuin.

1628-30 van Etten is extended by Mydorge and Henrion.

1631 Mersenne first asks about Multiply Perfect Numbers.

1632 Galileo: Dialogo ... sopra i due Massimi Sistemi del Mondo ... - first solution of Falling Down a Hole Through the Earth. Newton seems to be the first to determine the time taken.

1633 van Etten in English.

1634 or 1641 Yoshida: Jink\_-ki - first extant Japanese version of Josephus Problem, with additional feature of skipping last of first group; first extant Japanese Binary Divination.

1636 Schwenter: Deliciae Physico-Mathematicae.

1640 Frenicle: letter to Mersenne mentions a Magic Triangle and a Magic

Hexagon.

1640 Fermat - first mention of Magic Cubes.

1641 van Westen: *Mathematische vermaecklyckheden* is a translation of van Etten into Dutch.

1647 Mersenne.

1651-53 Schwenter expanded to 3 vols. by Harsdorffer.

c1660 Frenicle finds the 880 Magic Squares of order 4.

1660 Wecker: *Eighteen Books of the Secrets of Art & Nature*, translated by Read.

1663 Cardan: *Opera Omnia*.

1672 Leibniz discovers Binary Arithmetic but does not publish on it for about twenty years.

c1678, 1698 Leibniz MSS about Solitaire, first published in 1992.

1682 d'Aviso: *Trattato della Sfera* - first Knotting a Strip to Make a Regular Pentagon.

1685 Wallis: *De Algebra Tractatus* - first publication of Prince Rupert's Problem.

1694 Wm. Leybourn(e): *Pleasure with Profit*.

1694 Ozanam: *Recreations Mathematiques et Physiques* - False Balance; first Clock Problem.

1694 Hyde: *De Ludis Orientalis*.

1697 Berey - first depiction of Solitaire.

c1700 St. Ives rhyme is well known.

1702 Whiston's Euclid discusses Rope Round the Earth problem.

1707 Newton: *Arithmetica Universalis* - Newton's Cattle Problem.

1708 Remond de Montmort: *Essai d'Analyse sur les Jeux de Hasards*, 1st ed. - first publication of Derangements.

1708 Ozanam in English.

1710 Sauveur finds first magic cube and invents() Latin squares.

1710 Leibniz - first published mention of Solitaire.

1713 N. Bernoulli - first mention of St. Petersburg Paradox.

1714 Remond de Montmort, 2nd ed. - first publication of Derangements.

1725 Ozanam expanded to 4 vols. by Grandin. (Probably 1723) First appearance of many topological problems: Scissors on String; People Joined by Ropes at Wrists; Cherries Puzzle; Solomon's Seal. First mention of Knight's Tours outside the chess literature. First orthogonal Latin Squares. First Cutting a Card so One can Pass Through It.

1726 Colson first describes negative digits.

1727 Kanchusen: *Wakoku Chie-kurabe* [Japan Wisdom Competition] - simple Tangram-like puzzle; Staircase Cut; first to see that one can count out either group first in the Josephus situation by using different starting points and/or counts.

1728 D. Bernoulli first solves general linear recurrences, assuming distinct roots, and obtaining Binet's formula for Fibonacci Numbers. First solution of  $xy = yx$  in integers.

1730 Colson invents Negative Digits.

1733 Buffon invents Buffon's Needle Problem.

1735 North Pole problems were well known.

1736 Euler on Euler circuits.

1740 Sa(u)nderson: *Elements of Algebra*.



- 1742 "Ganriken": Sei-Shonagon Chie-no-Ita - Japanese version of Tangrams, very similar, but with different pieces.
- 1743 Nakane: Kanja-otogi-soshi - first appearance of Tait's Counter Puzzle.
- c1744 Dilworth: The Schoolmaster's Assistant - first Four Fours.
- 1745 Simpson: A Treatise of Algebra - first Times from Meeting to Finish Given.
- 1747 Alberti: I Giochi Numerici.
- 1748 Ladies' Diary gives a Tethered Goat Problem.
- 1748 Euler: Introductio in Analysin Infinitorum - general solution of  $xy = yx$
- 1749 Les Amusemens - first Quadrisection of an L-Tromino; first Dissection of a Cross into Zs and Ls; first Octagram Puzzle; first Dissection of Five Squares to One; first Rearrange a Cross of Six to Make Two Lines of Four; first type III Age Problem.
- 1749 Philidor: Analyze du Jeu des checs.
- 1750 Franklin's elaborate Magic Squares.
- c1750 Edmond Hoyle active.
- 1751 Walkingame: The Tutor's Assistant.
- 1757, 1759 Euler on knight's tours.
- 1770 Euler: Algebra.
- 1771 Vandermonde on Knight's Tours - first 3D version.
- 1773 Lessing first publishes Archimedes' Cattle Problem.
- 1774 Hooper: Rational Recreations. First discussion of a card shuffle; first form of Polyaboloes; first Geometric Money ( $3 \times 10$  to  $2 \times 6$  &  $4 \times 5$ ); first mnemonic for Divination of a Pair of Cards from its Rows (MUTUS DEDIT NOMEN COCIS).
- 1775 Euler on Josephus Problem - first to find the recurrence for the last person.
- 1778 Euler on Curves of Constant Width.
- 1778 Ozanam-Montucla, dropping the topological problems. First Shortest Route via a Wall.
- 1780 Utamaro depicts Tangram-type puzzle.
- 1782 Euler on Latin Squares.
- 1782 Bonnycastle: Introduction to Algebra.
- 1784 Watt's Linkage.
- 1788 Pike: A New and Complete System of Arithmetic - first motion with and against current problem.
- 1789 Bullen: A New Compendium of Arithmetic.
- c1790 Fox invents Thirty-One Game.
- 1790 Catel: Mathematisches und physikalisches Kunst-Cabinet - first Six-piece Burr; first Imperial Scale; first Circle, Square, Triangle Silhouette puzzle; first  $6 \times 6$  into Zs and Ls; first Puzzle Box.
- 1794 Eadon: The Arithmetical and Mathematical Repository.
- c1800 A French dice game was introduced to New Orleans and develops into craps.
- 1801-03 Bestelmeier: Magazin von verschiedenen Kunst- und andern n?tzlichen Sachen .... [catalogue] - Six-piece Burr; Imperial Scale; Circle, Square, Triangle Silhouette puzzle;  $6 \times 6$  into Zs and Ls.
- 1801 Strutt: The Sports and Pastimes of the People of England.
- 1803 Earliest Chinese Tangram book.
- 1803 Ozanam-Hutton.

- 1800-10 Tangram craze in Europe and China.
- 1807 Bestelmeier catalogue for this year shows a Tangram.
- 1810 Poinsot discovers Great Dodecahedron and Great Icosahedron.
- 1812 Laplace: *Théorie Analytique des Probabilités*.
- 1816 Nieuwland finds largest Cube which will Pass Through a Cube.
- 1817 Colebrooke: translation of the Arithmetic and Algebra chapters of Brahmagupta's *Brahma-sphuta-siddhanta* and Bhaskara's *Lilivati* and *Bijaganita*.
- c1818 *Endless Amusement*.
- c1819 Laplace: *Essai Philosophique sur les Probabilités* (A Philosophical Essay on Probabilities) - first to discuss Attempts to Modify Boy-Girl Ratio.
- c1820 Babbage is first to write about Tic-Tac-Toe and first to attempt analysis of a game.
- 1821 Jackson: *Rational Amusement for Winter Evenings* - first Configuration Problems; first Missionaries and Cannibals problem; North Pole problems; first Dissect Circle into Two Hollow Ovals.
- 1822 Babbage observes a form of the Prisoners' Dilemma.
- 1822 Minguet é Irol: *Engamos ...* - first diagram of the pieces of a Six Piece Burr.
- 1826 Steiner first studies number of regions determined by  $n$  planes.
- 1826 *A Sequel to the Endless Amusement*.
- 1828 [Clarke, ed.]: *Boy's Own Book* - first Heart and Ball Puzzle.
- 1829 First US ed. of *Boy's Own Book*.
- 1834 First mention of poker in the US.
- 1835 M. Ohm: *Die reine Elementar-Mathematik*, 2nd ed. - first use of 'goldene Schnitt'.
- 1835 *The Riddler; A Collection of Puzzles*.
- 1836 First chess journal - *La Pal...mede*, founded by La Bourdonnais in Paris.
- 1840 Lehmus poses Steiner-Lehmus Theorem to Steiner.
- 1840 *Ozanam-Riddle*.
- 1843 *Crambrook's Catalogue* - mentions Puzzle Boxes.
- 1843 Binet gives his formula for Fibonacci Numbers, but it was already given, much more clearly, by D. Bernoulli in 1728.
- 1843 Fuss: *Correspondance Mathematique et Physique*.
- 1844 *Boy's Treasury of Sports, Pastimes, and Recreations* - first That Man's Father.
- 1846 *Schachzeitung* starts.
- 1846 Walker: *The Art of Chess-Play*, 4th ed.
- 1847 Beverley finds first Semi-magic Knight's Tour.
- 1847 *The Illustrated Boy's Own Treasury*. May be the same as the 1860 version
- 1848 Bezzel proposes Eight Queens Problem.
- 1849 *Family Friend* starts.
- 1850s Matchstick puzzles begin.
- c1850 Gorham develops Plaiting of Polyhedra.
- c1850 Jacob's Ladder toys appear.
- 1850 Nauck gives first complete solution of Eight Queens Problem.
- 1851 Howard Staunton organizes first international chess tournament, at the St. George's Club in London, in association with the Great Exhibition. Anderssen wins.

- 1853 Sarrus invents Straight Line Linkage.
- 1854 First Multiplying by Shifting.
- 1855 British Chess Association develops from northern and midlands clubs. First congress in Manchester in 1857.
- 1857 First American Chess Congress and founding of American Chess Association in New York.
- 1857 D. W. Fiske starts Chess Monthly.
- 1857 The Magician's Own Book - first Dead Dogs.
- 1857 Uncle George [George Frederick Pardon]: Parlour Pastime - first Passing Over Counters; first Place Four Points Equidistantly.
- 1857 Early version of Spots on Foreheads.
- 1857-62 Boncompagni publishes Fibonacci.
- c1858 Loyd claimed to have invented the 8x8 to 5x13 Vanishing Area about this time.
- 1858 The Sociable - first Number of Cuts to Make N Pieces.
- 1858 Kirkman notes Hamilton Circuits of the Dodecahedron.
- 1858 Listing and Mobius independently discover the Mobius Strip, but don't publish until 1861 and 1865, respectively.
- 1858 Landells: The Boy's Own Toy-Maker.
- 1859 The Secret Out.
- 1859 Hamilton: Icosian Game.
- 1859 Book of 500 Curious Puzzles - first Mitre Puzzle; first Unfair Division; first combination of 1,2,...9 to make 100; first Use of Counterfeit Bill; first Probabilistic Truth-tellers and Liars Problem; first Removing Loop From Arm.
- 1859 Indoor and Outdoor Games for Boys and Girls.
- 1860 Boy's Own Conjuring Book.
- 1860 Illustrated Boy's Own Treasury. May be same as 1847
- 1860 Landells: Boy's Own Toy-Maker.
- 1862-63 de Jaenisch: *Traité des Applications de l'Analyse Mathématique au Jeu des ches*, 3 vols.
- 1864 First Cryptarithm, in *American Agriculturist*.
- 1865 Charades, Enigmas, and Riddles. Collected by a Cantab.
- 1865 Sylvester first asks for the Probability of a Triangle being Acute.
- 1867 First appearance of Frogs and Toads, in *American Agriculturist*.
- 1868 First appearance of 8x8 to 5x13 Vanishing Area.
- 1868 Pardon: *Parlour Pastimes*.
- 1869 G. Cantor gives a general treatment of mixed base number systems.
- 1871 Cremer: *The Secret Out*.
- 1871 Cremer: *The Magician's Own Book*, UK ed., quite different from US 1857 book.
- 1871 Loyd: *Trick Ponies*.
- 1871 First appearance of a Bug Problem, in a *Cambridge Tripos*.
- 1872 Cremer: *Hanky Panky* - first Division (of 17 elephants) into Half + Third + Ninth; first Jacob's Ladder used as Chinese Wallet.
- 1872 Elliott: *Within Doors*.
- 1872 Gros: *Theorie du Baguenodier* - first analysis of Chinese Rings and hence first Gray Code.
- 1873 Lemoine considers Probability that Three Lengths Form a Triangle.
- 1874 Labosne's edition of Bachet's *Problemes*. Reprinted 1879, 1884 and since.

- 1874 van der Linde: Geschichte und Literature des Schachspiels.
- 1875 Reuleaux: Theoretische Kinematik - discusses Reuleaux Triangle.
- 1875 Diagonal Six Piece Burr.
- 1875 Grunwald invents Negative Bases.
- 1876 Fechner: Vorschule der Zsthetik - formalises aesthetic aspects of golden ratio.
- 1876 Child: The Girl's Own Book, new ed. [First appeared, c1830, but earliest extant copies seem to be 6th ed., 1833.]
- 1877 Kamp: Danske Folkeminder ....
- 1878 Kinsey patents 6x6 sliding piece puzzle and makes first mention of use of non-square pieces.
- c1878 Baudot uses Gray Code in a printing telegraph.
- 1878 Lucas: Théorie des fonctions numériques simplement périodiques begins modern theory of recurrences.
- 1879 First publications on Fifteen Puzzle. (Possibly 1880)
- 1879 First Ring Maze.
- 1879 Mittenzwey: Mathematische Kurzweil - first A Right Angle is Obtuse; first Place an Even Number in Each Line; first Bridge a Moat with Planks; first Number of Buses Met.
- 1880 Fifteen Puzzle craze.
- 1880 Tait proposes Sliding Cube Puzzle.
- 1880 Otto Korschelt publishes "Das japanisch-chinesische Spiel Go" in Mitteilungen der deutschen Gesellschaft f?r Natur und Volkerkunds Ostassiens (1880-81) - the first extended description of go in a Western language.
- 1880 Luers patents first Dissected Chessboard.
- 1880 van der Linde: Erst Jartausend.
- 1880-81 Marre publishes Chuquet's Triparty.
- 1881 Simon Newcomb observes the First Digit Problem and derives Benford's Law.
- 1881 Milne: The Inductive Algebra.
- 1881 General Four Fours problem appears in Knowledge.
- 1881 Cassell's Book - first Removing Waistcoat without Removing Coat.
- 1881 Tissandier: Les Récréations Scientifiques - first Packer's Secret.
- 1881 British Chess Magazine starts.
- 1870-95 Carroll active - first Water in Wine versus Wine in Water Problem; first Pawning Money.
- 1882 Lucas: Récréations Mathématiques, vol. 1. Gives De Fontenay's idea of couples crossing a river with an island.
- 1883 Proctor finds Largest Parcel One Can Post.
- 1883 Lucas invents Tower of Hanoi.
- 1883 Lucas: Récréations Mathématiques, vol. 2 - first Dots and Boxes; first Shunting Puzzles.
- 1883 Hunter and Squirrel problem discussed in Knowledge.
- 1883 Ward patents first Rolling Piece Puzzle - with tetrahedra.
- 1884 Sylvester poses() and answers the Postage Stamp Problem for two values.
- 1880s Wire puzzles appear.
- 1885 Gr?nwald introduces negative bases for number systems.
- 1886 Ring and Spring Puzzle appears.

1886 Peck & Snyder catalogue.  
1887-88 Pauwels patents squared Trick Dovetail Joint.  
1888 Hoernle first describes the Bakhshali Manuscript.  
1889 Bertrand: Calcul des Probabilités - first Box Paradox; first Chord Paradox.  
1889 Rice patents a 2x2x2 Sliding Cube Puzzle.  
1889 von Haselberg finds first Magic Hexagon.  
1889 Lucas first mentions Tower of Hanoi with More Pegs.  
1890 Thurston patents matching puzzles.  
1890 Lemon: Everybody's Illustrated Book of Puzzles - Use of Counterfeit Bill.  
1890 Altekruise patents Altekruise Puzzle.  
1890 Der Gute Kamerad: Kolumbus-Eier - first Tumble Rings.  
1890 1089 Problem, with English money giving 12 18s 11d, appears.  
1890-93 Tom Tit: La Science Amusante - shows square trick dovetail joint.  
1891 Hutchison, ed.: Indoor Games and Recreations - first Cube Made from Six U Pieces.  
1891 Lucas: Théorie des Nombres - first Folding a Strip of Stamps problem.  
1891 Hoffmann: Magic at Home - an annotated translation of Tom Tit: La Science amusante, vol. 1.  
1891 Smith patents a Triangular Solitaire.  
1891 Everett patents Loony Loop.  
1892 Ball: Mathematical Recreations and Essays, 1st & 2nd eds. (MRE) - first Fore and Aft Puzzle; first Every Triangle is Isosceles.  
1892 Berkeley & Rowland: Card Tricks & Puzzles.  
1893 Lucas: Récréations Mathématiques, vol. 3.  
1893 Hoffmann: Puzzles Old and New - first Cube Dissection Puzzle; shows Three Piece Burr; first publication of Dissected Die; first Interlocked Nails; first Horseshoes Puzzle; first Caught Heart.  
1893 Sylvester proposes Sylvester's Problem of Collinear Points.  
1893 MacMahon & Jocelyn patent MacMahon Pieces.  
1893 Lewis Carroll's Monkey Problem.  
1894 Carroll prints his Barber Paradox.  
1894 Lucas: Récréations Mathématiques, vol. 4.  
1894-98 Gomme: Traditional Games of England, Scotland and Ireland.  
1890s Walker analyses Celts = Rattlebacks.  
1895 Culin: Korean Games.  
1895 Curtze publishes Munich 14684.  
1895 Lucas: L'Arithmétique Amusante.  
1896 Ball: Mathematical Recreations and Essays, 3rd ed. - first Salary Puzzle.  
1896-97 Loyd: columns in Brooklyn Daily Eagle.  
1896-98 Loyd & Dudeney: columns in Tit-Bits.  
1897 von der Lasa: Zur Geschichte und Literatur des Schachspiels.  
1897 Loyd or Dudeney uses symmetry in a game analysis.  
1897 Loyd or Dudeney introduces No Three in a Line Puzzle.  
1897 Loyd or Dudeney introduces Counting Routes in a Word Diamond.  
1897 Loyd introduces Chain Cutting and Rejoining puzzles.  
1898 Ball-FitzPatrick, 1st ed. - first 1089 Problem.  
1898 Schubert: Mathematische Mussestunde.  
1899 Carroll: The Lewis Carroll Picture Book, ed. by Collingwood - first Lowering from Tower problem.

- 1899 Segerblom describes Three Piece Burr with identical Pieces.
- 1899 Pick gives Pick's Theorem.
- 1899 Fourrey: Recreations Arithmetiques.
- 1896-1903 Dudeney's Puzzles & Prizes column in the Weekly Dispatch.
- c1900 Russell invents his paradox.
- c1900 Archimedes' letter on Loculus of Archimedes is discovered.
- 1900 Brückner: Vielecke und Vielflache - first rotating ring of polyhedra.
- 1900 Hilbert's Problems. He asks about tessellating space.
- 1900 Schubert: Mathematische Mussestunde, 2nd ed. in 3 vols.
- 1900 Schossow (US) and Moffatt (UK) patent Instant Insanity Puzzles.
- 1900-02 Suter: Die Mathematiker und Astronomen der Araber ....
- 1901 Ahrens: Mathematische Unterhaltungen und Spiele, 1st ed.
- 1902 Dudeney: Lady Isabel's Casket begins development leading to Squaring the Square.
- 1902 Dudeney's Square to Triangle Dissection.
- 1902 Workman: The Tutorial Arithmetic - first Skeleton Arithmetic Problems.
- 1902 Bouton: Nim: A game with a complete mathematical theory - first mention of Nim.
- 1902 Tropicke: Geschichte der Elementar-mathematik, 1st ed., 2 vols.
- 1903 Loyd: Chinese Tangrams.
- 1903 Cox's edition of Strutt: The Sports and Pastimes of the People of England.
- 1903 First Dissected T.
- 1903 Dudeney's four side Spider and Fly Problem.
- 1904 Berry invents Visiting Card Paradox and Berry's Paradox.
- 1904 Dudeney: Great puzzle crazes, in Strand Magazine.
- 1904 Benson: The Book of Indoor Games ....
- 1904 Ahrens: Mathematische Spiele, in Encyk. der Math. Wiss.
- 1905 Dudeney's five side Spider and Fly Problem.
- 1905 Ball: Mathematical Recreations and Essays, 4th ed. - popularises Chessboard Placing Problems.
- 1905 Fiske: Chess in Iceland.
- 1905 Zermelo is first to analyse games in general.
- 1905 Ice in a Full Glass of Water appears.
- 1906 Dudeney's No Three in a Line Problem.
- 1906 Laisant: Initiation Mathématique - first Fly Between Trains; first Limited Means of Transport.
- 1907 Berwick: Seven Sevens Problem.
- 1907 Pearson: Twentieth Century Standard Problem Book - first Counting Triangles problem; first Ladder Over Box; first pan-digital fractions; first Push a Bicycle Pedal.
- 1907-08 Loyd: Our Puzzle Magazine.
- 1907 Dudeney: Canterbury Puzzles (CP). Broken chessboard is first use of all 12 pentominoes.
- 1907 Loyd's Columbus Egg Puzzle - join all points of a 3x3 array with a four segment line.
- 1907 Fourrey: Curiosities Geometriques.
- 1907-09 Ball-FitzPatrick, 2nd ed.
- 1908 Scrutchin patents a Polyiamond puzzle.
- 1908 Greeling invents his paradox, about Heterological.

- 1908 Morley's Theorem.
- 1908 Dudeney: Puzzles from games; Some much-discussed puzzles; The world's best puzzles - all in Strand Magazine.
- 1908 First modern Crossed Ladder Problem.
- 1908 Dudeney: The broken chessboard - first depiction of pentominoes.
- 1908 W. F. White: A Scrap-Book of Elementary Mathematics.
- 1909 First Western journal on go - Die Abonnente - founded by L. Pfaundler of Graz, Austria.
- 1910 Goldston: More Tricks and Puzzles - first description of Loyd's Pencil Puzzle.
- 1910 Dudeney starts his Perplexities column in Strand Magazine. It runs to c1931
- 1910 Witting - first Illegal Cancellation.
- 1910 Bullivant: Home Fun.
- 1911 Lewis first discusses Multiplying by Reversing.
- 1911 Ball: Mathematical Recreations and Essays, 5th ed.
- 1911 Manson: Indoor Amusements.
- 1912 Morley Adams, ed.: The Boy's Own Book of Indoor Games and Recreations.
- 1913 21 Dec: Arthur Wynne's first crossword puzzle for New York World Sunday Magazine.
- 1913 Dudeney: first publication of Gas, Water and Electricity Problem.
- 1913 R. Journet patents first Centrifugal Puzzle - Spoophem.
- 1913 Mikami: The Development of Mathematics in China and Japan.
- 1913 A. C. White: Sam Loyd and His Chess Problems.
- 1913 Murray: History of Chess.
- 1914 Ball: Mathematical Recreations and Essays, 6th ed.
- 1914 Loyd: Cyclopedia - Mrs Perkins' Quilt; first Selling, Buying and Selling Same Item; first Bookworm's Distance; first Circling an Army problem.
- 1915 Watts patents device for drilling square holes.
- 1915 Rausenberger discovers the convex Deltahedra.
- 1917 Ball: Mathematical Recreations and Essays, 7th ed.
- 1917 Dudeney: Amusements in Mathematics (AM) - first 2592 Problem.
- 1917 Licks: Recreations in Mathematics - first Moving Round a Corner problem.
- 1917 Smith: On the origin of certain typical problems.
- 1910-18 Ahrens: Mathematische Unterhaltungen und Spiele, 2nd ed. (MUS).
- 1918 Tom Tit - Knott: Scientific Amusements.
- 1918 Ahrens: Altes und Neues aus der Unterhaltungsmathematik (A&N).
- 1919 Dudeney: Fly Between Trains.
- 1919 Ball: Mathematical Recreations and Essays, 8th ed.
- 1919 Smith: Number Stories of Long Ago.
- 1920 Daily Mail World Record Net Sale puzzle.
- 1920 Dudeney's Damaged Measure starts Ruler with Minimal Number of Marks problem.
- 1920 Ball: Mathematical Recreations and Essays, 9th ed.
- 1920 First Resistor Networks problems.
- 1919-23 Dickson: History of the Theory of Numbers.
- c1920 Bartl magic catalogue.
- c1920 Five Brick Puzzle develops into standard form.

early 1920s Polyiamond puzzles used for promotions.  
 1921 Heath: History of Greek Mathematics (HGM).  
 1921 MacMahon: New Mathematical Pastimes.  
 1921 Blyth: Match-Stick Magic.  
 1921-24 Tropicke: Geschichte der Elementar-mathematik, 2nd ed., 7 vols.  
 1922 Ball: Mathematical Recreations and Essays, 10th ed.  
 1922-23 Langley poses his Adventitious Angles problem.  
 1923 Coffin proposes Card Piling Over a Cliff Problem.  
 1923 Smith: History of Mathematics.  
 1924 2 Nov: First British crossword appears in The Daily Express.  
 1924 FIDE (Fédération Internationale des échecs) founded.  
 1924 The Week-End Book - first Impossible Exchange Rates.  
 1924 Dudeney, in Strand, first() gives SEND + MORE = MONEY.  
 1924 The Times refers to crossword puzzles as a menace. Cf 1930.  
 1925 Ackermann: Scientific Paradoxes and Problems.  
 1926 Dudeney: Modern Puzzles (MP) - first description of all Nets of a Cube.  
 1926 Dudeney: The psychology of puzzle crazes.  
 1926 Dudeney gives first Crossnumber Puzzle in Strand.  
 1926 Western Puzzle Works Catalogue.  
 1926 Ben Ames Williams: "Coconuts", in the Saturday Evening Post causes popular furore.  
 1926 Western Puzzle Works Catalogue shows first Pick Up Puzzle.  
 1927 Davenport invents Birthday Problem.  
 1927 King: Best 100 Puzzles - first Use of Fallen Signpost.  
 1927 Sanford: History and Significance of Certain Standard Problems in Algebra (H&S).  
 1927-33 Kaye's study of the Bakhshali Manuscript.  
 1913-42 Perelman active - first to consider travel around a 'square' on the earth; first to ask for the Largest Number Expressible with Four Ones, etc.; first to consider Nets of a Cube.  
 1928 Wyatt: Puzzles in Wood.  
 1928 Loyd Jr.: Sam Loyd and His Puzzles (SLAHP) - first Antimagic Figure, a 3x3 square; first Counting Squares problem.  
 1928 Collins: Fun with Figures.  
 1929 Smith: A Source Book in Mathematics.  
 1930 The Times succumbs and begins running a crossword puzzle.  
 1930 Sanford: A Short History of Mathematics.  
 1930 Kraitchik: La Mathématique des Jeux.  
 1930 Hargrave: A History of Playing Cards and a Bibliography of Cards and Gaming.  
 1931 Dudeney's Perplexities column ends with his death.  
 1931 MINOS [S. Vatriquant], in Sphinx, introduces word "cryptarithmie" and gives desirable qualities for one.  
 1931 Loyd Jr.: Are you good at solving puzzles.  
 1931-39 Sphinx, ed. by Kraitchik.  
 1932 Dudeney: Puzzles and Curious Problems (PCP) - first Smith, Jones, Robinson Problem; first Mirror Reversal Paradox.  
 1932 Phillips: Week-End Problems Book.  
 1933 Read - first Missing Dollar.



1933 Abraham: Diversions and Pastimes.  
 1933 Phillips: Playtime Omnibus.  
 1933-34 Dissection of  $1 \times 1 \times 2$  to a Cube.  
 1934 Cohen & Nagel describe Reversal of Averages Paradox.  
 1934 Reutersv?rd invents Tribar but doesn't publish it.  
 1930-40 Tropicke: Geschichte der Elementar-mathematik, 3rd ed., vols. 1-4 (the MSS of the remaining volumes were lost in 1945).  
 c1935 Using Chain Links to Pay for a Room.  
 1935 Première Congrès International des Récréations Mathématiques in Brussels.  
 1935 Spots on Foreheads develops.  
 1935-38 Datta & Singh: History of Hindu Mathematics.  
 1935-39 Fairy Chess Review has a number of polyomino problems.  
 1936 Truth-tellers and Liars Problems develop.  
 1936 Cigarette Butts problem occurs.  
 1936 Phillips: Brush Up Your Wits - first Ship's Ladder in Rising Tide.  
 1936 Hein invents Soma Cube.  
 1936 Sprague discovers Sprague-Grundy Theory.  
 1936 Rudin: So You Like Puzzles!  
 1937 Ciamberlini & Marengoni: Su una interessante curiosit... numerica - first publication of the Four Number Game, attributed to Ducci.  
 1937 Hoppenot, in Sphinx, first asks about Numbers Equal to the Sum of Some Power of Their Digits.  
 1937 Deuxième Congrès International des Récréations Mathématiques.  
 1937 Phillips: Question Time.  
 1938 Benford: The law of anomalous numbers - popularizes Newcomb's discovery of the First Digit Problem, generally known as Benford's Law.  
 1938 Coxeter et al.: The Fifty-Nine Icosahedra.  
 1938 Steinhaus: Mathematical Snapshots (in Polish and English) - first Self-Rising Dodecahedron.  
 1939 August: The Black-Out Book.  
 1939 von Mises first studies Birthday Problems, but not the usual version.  
 1939 Ball-Coxeter: Mathematical Recreations and Essays, 11th ed. - first publication of Davenport's version of the Birthday Problem.  
 1939 Depew: Cokesbury Game Book.  
 1939 Adams: Morley Adams Puzzle Book - first Counting Hexagons problem; first Reverse a Triangular Array of 10 Circles.  
 1939 First discussion of polycubes in Fairy Chess Review.  
 1939 Grundy discovers Sprague-Grundy Theory.  
 1939 Sprague finds first perfect squared square.  
 1939 Chowla shows Cubing the Cube is impossible.  
 c1939 Stone invents Flexagons and Flexatube. Stone, Feynman, Tuckerman & Tukey study them.  
 1939-41 Thomas: Selections Illustrating the History of Greek Mathematics (SIHGM). Late 1930s 3D and 4D Tic-Tac-Toe played at Cambridge.  
 1940 Johnson patents Two Piece Dissection of the Tetrahedron.  
 1940 McKay: At Home Tonight.  
 1940 Williams & Savage: The Penguin Problems Book.  
 1941 Heald: Mathematical Puzzles - first Erroneous Averaging of Velocities.

- c1941 Ekboom notes Unexpected Hanging Paradox.
- 1942 Filipiak: 100 Puzzles - How to Make and Solve Them.
- 1942 Hein invents Hex.
- 1943 First Early Commuter.
- 1943 Kraitichik: Mathematical Recreations.
- 1943 Origin of False Coin Problems.
- 1943-44 Richmond dissects 63 into  $33 + 43 + 53$ .
- 1943-47 Sullivan: Problems involving unusual situations.
- 1944 Scorer, Grundy & Smith describe the graph of the Tower of Hanoi.
- 1944 Northrop: Riddles in Mathematics.
- 1944 Steinhaus asks How to Divide a Cake Fairly.
- 1944 Bagley: Paradox Pie - first Square Peg in Round Hole or Vice Versa; first  $28/7 = 13$ ; first Walking in the Rain.
- 1944 Bagley: Puzzle Pie.
- c1945 Wayne introduces Doubly True Cryptarithms.
- c1945 Hempel invents Hempel's Rave Paradox.
- 1946 Wyatt: Wonders in Wood.
- 1946 Leeming: Fun with Puzzles.
- 1946 Black: Critical Thinking - first Covering Deleted Chessboard with Dominoes.
- 1946-47 Freudenthal & van der Waerden rediscover Convex Deltahedra.
- 1947 Gardner describes a hexatetraflexagon.
- 1950 Flood & Drescher identify Prisoners' Dilemma.
- 1952 Riccardi: Biblioteca Matematica Italiana dalla Origine della Stampa ai primi Anni del Secolo XIX.
- 1952 Murray: A History of Board-Games Other than Chess.
- 1952 Schuh's Game of divisors, isomorphic to Chomp.
- 1953 Littlewood: A Mathematician's Miscellany.
- 1953 Tippee Tops popular in the UK.
- 1954 Golomb: Checkerboards and polyominoes starts general interest in Polyominoes.
- 1954 Coxeter et al.: "Uniform polyhedra".
- 1955 Ransom: One Hundred Mathematical Curiosities.
- 1955 Hunter introduces word 'alphametic'.
- 1956 Crowe observes connection between Gray Codes and Tower of Hanoi.
- 1956 Gardner starts his Mathematical Games column in Scientific American.
- 1956 Gardner: Mathematics, Magic and Mystery.
- 1957 Gardner describes Polyominoes.
- 1957 Perelman: Figures for Fun, in English.
- 1957 Reeve generalizes Pick's Theorem to three dimensions.
- 1957 Hall: A Bibliography of Books on Conjuring in English from 1580 to 1850 (BCB).
- 1958 Gamow & Stern: Puzzle-Math - first Forty Unfaithful Wives.
- 1958 R. Penrose invents Tribar; L. S. Penrose invents Impossible Staircase.
- 1958 Gardner gives first description of Bridg-It.
- 1958 Gardner describes Solid Pentominoes, Pentacubes, Tetracubes.
- 1958 Gardner Describes Soma Cube.
- 1958 Needham: Science and Civilization in China, vol. III.
- 1958 Scott does first programming of a combinatorial puzzle - Pentominoes on

8x8 with 2x2 in centre.  
 1959 Bath: Fun with Figures.  
 1959 Bose & Shrikande disprove Euler's conjecture on orthogonal Latin Squares.  
 1959 Gardner begins collecting his columns in books with: The Scientific American Book of Mathematical Puzzles and Diversions.  
 c1959 Hein's Superellipse.  
 1959-60 Mathematical Puzzles of Sam Loyd 1 & 2 (MPSL1&2), ed. by Gardner.  
 1955-78 Schaaf: A Bibliography of Recreational Mathematics, 4 vols.  
 1960 Escher: Ascending and Descending.  
 c1960 O'Beirne's Steps.  
 1961 Escher: Waterfall.  
 1961 Gardner: The Second Scientific American Book of Mathematical Puzzles and Diversions.  
 1961-62 O'Beirne's Puzzles and Paradoxes column in New Scientist - first describes Tetraboloes; coins word Polyiamonds.  
 1961-64 Recreational Mathematics Magazine, ed. by Madachy (RMM).  
 1962 Dresner: Science World Book of Brain Teasers.  
 1962 Conway and M. Guy find all solutions of Soma Cube.  
 1964 Duby is first to compute knight's tours and finds all of them on the 6x6 board.  
 1964 First published Two Pronged Trident.  
 1965 Golomb: Polyominoes.  
 1965 Think-a-Dot introduced.  
 1965 O'Beirne: Puzzles and Paradoxes.  
 1965 Greenblatt: Mathematical Entertainments.  
 c1965 Li & Du: Chinese Mathematics: A Concise History, in Chinese.  
 1966 Madachy: Mathematics on Vacation.  
 1966 Taylor: The Mathematical Practitioners of Hanoverian England 1714-1840.  
 1966 Gardner: Martin Gardner's New Mathematical Diversions from Scientific American.  
 1966-67 Johnson & Zalgaller find the Regular-Faced Polyhedra.  
 1967 Gardner describes Polyhexes.  
 1967 Gardner: The Numerology of Dr. Matrix.  
 1967 Schofield solves Eight Puzzle.  
 1967 Gardner gives first description of Conway's Sprouts.  
 1967 Dudeney: 536 Puzzles and Curious Problems, ed. by Gardner (536).  
 1967 Trigg: Mathematical Quickies.  
 1968 Journal of Recreational Mathematics starts, ed. by Madachy (JRM).  
 1969 Simmons invents Sim.  
 1969 Gardner: The Unexpected Hanging and Other Mathematical Diversions.  
 1969 Struik: A Source Book in Mathematics 1200-1800.  
 1969 Parker Bros. produce Soma Cube.  
 1970 Smith: Rara Arithmetica, 4th ed.  
 1970 Hein: Pyramystery - first Ball Pyramid Puzzles, in two forms under the same name!  
 1970 Taylor: The Mathematical Practitioners of Tudor & Stuart England 1485-1714.  
 c1970 Conway invents Life; Gardner describes it in 1970.

- 1971 Avedon & Sutton-Smith: The Study of Games.
- 1971 Doubleday: Test Your Wits, vol. 2.
- 1972 Wieber: Das Schachspiel in der Arabischen Literatur ....
- 1972 Hall: Old Conjuring Books (OCB).
- 1973 Zaslavsky: Africa Counts.
- 1973 Libbrecht: Chinese Mathematics in the Thirteenth Century.
- 1973 Fisher: The Magic of Lewis Carroll.
- 1974 Ball-Coxeter: Mathematical Recreations and Essays, 12th ed.
- c1974 Penrose invents Penrose Pieces.
- 1972-1981 Games & Puzzles, in England.
- 1975 Gardner: Martin Gardner's Sixth Book of Mathematical Games from Scientific American.
- 1975 Gardner: Mathematical Carnival.
- 1975 Golomb trademarks word 'Pentominoes'.
- 1976 Biggs, Lloyd & Wilson: Graph Theory 1736-1936 (BLW).
- 1976 Gaffney & Steen: Annotated Bibliography of Expository Writing in the Mathematical Sciences.
- 1976 Gardner: The Incredible Dr. Matrix.
- 1976 Devi: Puzzles to Puzzle You.
- 1976-78 Toole Stott: A Bibliography of English Conjuring 1581-1876.
- 1977 Slocum: Compendium of Mechanical Puzzles.
- 1978 Folkerts produces first critical edition of Alcuin.
- 1978 Hermelink: Arabische Unterhaltungsmathematik.
- 1978 D. Hoffman's Cube.
- 1978 Rubik's Cube first starts to become known outside Hungary.
- 1978 Gardner: Mathematical Magic Show.
- 1978 Birtwistle: The Calculator Puzzle Book.
- 1975-1987 Jelliss produces Chessics. The Journal of Generalized Chess.
- 1979 Gardner: Mathematical Circus.
- 1980 TROPFKE: Geschichte der Elementar-mathematik, 4th ed., vol. 1.
- 1980-82 Rubik's Cube becomes greatest puzzle craze of all time.
- 1981 Moser: Research Problems in Discrete Geometry.
- 1981 Berloquin: Le Jardin du Sphinx.
- 1981 Gardner ends his regular Scientific American columns.
- 1982 Berlekamp, Conway & Guy: Winning Ways.
- 1983 Gardner: Wheels, Life and Other Mathematical Amusements.
- 1983-87 Schaaf's 12 Vestpocket bibliographies in Journal of Recreational Mathematics.
- 1980s Knowing Sum Versus Knowing Product develops.
- 1985 Gardner: The Magic Numbers of Dr. Matrix.
- 1985 Hayashi's thesis on the Bakhshali Manuscript.
- 1985 Flegg, Hay & Moss's study of Chuquet and his Triparty.
- 1985-86 Strens Collection purchased for Calgary and opening conference.
- 1980s onward Fraenkel: Selected Bibliography on Combinatorial Games and Some Related Material.
- 1986 Gardner: Knotted Doughnuts and Other Mathematical Entertainments.
- 1986 Slocum & Botermans: Puzzles Old & New (S&B).
- 1986 Hordern: Sliding Piece Puzzles.
- 1986 Sallows invents alphamagic squares.

1987 Gr?nbaum & Shephard: Tilings and Patterns.  
1987 Li & Du: Chinese Mathematics: A Concise History.  
1987 Ball-Coxeter: Mathematical Recreations and Essays, 13th ed.  
1987 Ascher analyses Mu Torere.  
1987-89 Jelliss produces Games and Puzzles Journal (successor to Chessics).  
1988 Hoffmann: Puzzles Old and New, of 1892, reprinted by Hordern.  
1988 Gardner: Time Travel and Other Mathematical Bewilderments.  
1989 Gardner: Penrose Tiles to Trapdoor Ciphers.  
1991 Ascher: Ethnomathematics.  
1991 Allen: Brain Sharpeners.  
1992 Rabinowitz: Index to Mathematical Problems 1980-1984.  
1992 Sallows devises Pangrams and Reflexicons.  
1992 Hadley & Singmaster translate and annotate Alcuin into English.  
1993 Folkerts and Gericke translate and annotate Alcuin into German.  
1993 Hordern's edition of Hoffmann, with colour illustrations.  
Last Web revision: December 22, 1998

Sito Web realizzato da **Gianfranco Bo**