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| Nota di contenuto | Aeromagnetic surveying -- Agricola, Georgius (1494–1555) -- Alfvén waves -- Alfvén, Hannes Olof Gösta (1908–1995) -- Alfvén's theorem and the frozen flux approximation -- Anelastic and Boussinesq approximations -- Anisotropy, electrical -- Anti-dynamo and bounding theorems -- Archaeology, magnetic methods -- Archaeomagnetism -- Auroral oval -- Baked contact test -- Bangui anomaly -- Barlow, Peter (1776–1862) -- Bartels, Julius (1899–1964) -- Bauer, Louis Agricola (1865–1932) -- Bemmelen, Willem van (1868–1941) -- Benton, Edward R. (1934–1992) -- Bingham statistics -- Biomagnetism -- Blackett, Patrick Maynard Stuart, Baron of Chelsea (1897–1974) -- Bullard, Edward Crisp (1907–1980) -- Carnegie Institution of Washington, Department of Terrestrial Magnetism -- Carnegie, research vessel -- CHAMP -- Chapman, Sydney (1888–1970) -- Coast effect of induced currents -- Compass -- Conductivity geothermometer -- Conductivity, ocean floor measurements -- Convection, chemical -- Convection, |

non-magnetic rotating -- Core composition -- Core convection -- Core density -- Core motions -- Core origin -- Core properties, physical -- Core properties, theoretical determination -- Core temperature -- Core turbulence -- Core viscosity -- Core, adiabatic gradient -- Core, boundary layers -- Core, electrical conductivity -- Core, magnetic instabilities -- Core, thermal conduction -- Core-based inversions for the main geomagnetic field -- Core-mantle boundary topography, implications for dynamics -- Core-mantle boundary topography, seismology -- Core-mantle boundary, heat flow across -- Core-mantle coupling, electromagnetic -- Core-mantle coupling, thermal -- Core-mantle coupling, topographic -- Cowling, Thomas George (1906–1990) -- Cowling's Theorem -- Cox, Allan V. (1926–1987) -- Crustal magnetic field -- D" and F Layers of the Earth -- D" as a boundary layer -- D", anisotropy -- D", composition -- D", seismic properties -- Della Porta, Giambattista (1535–1615) -- Demagnetization -- Depth to Curie temperature -- Dipole moment variation -- Dynamo waves -- Dynamo, Backus -- Dynamo, Braginsky -- Dynamo, Bullard-Gellman -- Dynamo, disk -- Dynamo, Gailitis -- Dynamo, Herzenberg -- Dynamo, Lowes-Wilkinson -- Dynamo, Model-Z -- Dynamo, Ponomarenko -- Dynamo, solar -- Dynamos, experimental -- Dynamos, fast -- Dynamos, kinematic -- Dynamos, mean field -- Dynamos, periodic -- Dynamos, planetary and satellite -- Earth structure, major divisions -- Elsasser, Walter M. (?–1991) -- EM modeling, forward -- EM modeling, inverse -- EM, industrial uses -- EM, lake bottom measurements -- EM, land uses -- EM, regional studies -- EM, tectonic interpretations -- Environmental magnetism -- Environmental magnetism, paleomagnetic applications -- Equilibration of magnetic field, weak and strong field dynamos -- Euler deconvolution -- First-order reversal curve (FORC) diagrams -- Fisher statistics -- Fleming, John Adam (1877–1855) -- Fluid dynamics experiments -- Galvanic distortion -- Gauss' determination of absolute intensity -- Gauss, Carl Friedrich (1777–1855) -- Gellibrand, Henry (1597–1636) -- Geocentric axial dipole hypothesis -- Geodynamo -- Geodynamo, dimensional analysis and timescales -- Geodynamo, energy sources -- Geodynamo, numerical simulations -- Geodynamo, symmetry properties -- Geomagnetic deep sounding -- Geomagnetic dipole field -- Geomagnetic excursion -- Geomagnetic field, asymmetries -- Geomagnetic hazards -- Geomagnetic jerks -- Geomagnetic polarity reversals -- Geomagnetic polarity reversals, observations -- Geomagnetic polarity timescales -- Geomagnetic pulsations -- Geomagnetic reversal sequence, statistical structure -- Geomagnetic reversals, archives -- Geomagnetic secular variation -- Geomagnetic spectrum, spatial -- Geomagnetic spectrum, temporal -- Geomagnetism, history of -- Gilbert William (1544–1603) -- Gravitational torque -- Gravity-inertio waves and inertial oscillations -- Grüneisen's parameter for iron and Earth's core -- Halley, Edmond (1656–1742) -- Hansteen, Christopher (1784–1873) -- Harmonics, spherical -- Harmonics, spherical cap -- Hartmann, Georg (1489–1564) -- Helioseismology -- Higgins-Kennedy paradox -- Humboldt, Alexander von (1759–1859) -- Humboldt, Alexander von and magnetic storms -- IAGA, International Association of Geomagnetism and Aeronomy -- Ideal solution theory -- IGRF, International Geomagnetic Reference Field -- Induction arrows -- Induction from satellite data -- Inhomogeneous boundary conditions and the dynamo -- Inner core anisotropy -- Inner core composition -- Inner core oscillation -- Inner core rotation -- Inner core rotational dynamics -- Inner core seismic velocities -- Inner core tangent cylinder -- Inner core, PKJKP -- Instrumentation, history of -- Interiors of planets and satellites --

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potential magnetic field theorems -- Precession and core dynamics -- Price, Albert Thomas (1903–1978) -- Principal component analysis in paleomagnetism -- Project MAGNET -- Proudman-Taylor theorem -- Radioactive isotopes, their decay in mantle and core -- Reduction to pole -- Repeat stations -- Reversals, theory -- Rikitake, Tsuneji (1921–?) -- Ring current -- Robust electromagnetic transfer functions estimates -- Rock magnetism -- Rock magnetism, hysteresis measurements -- Rock magnetometer, superconducting -- Runcorn, S. Keith (1922–1995) -- Runcorn's theorem -- Sabine, Edward (1788–1883) -- Seamount magnetism -- Secular variation model -- SEDI -- Seismic phases -- Seismo-electromagnetic effects -- Shaw and microwave methods, absolute paleointensity determination -- Shock wave experiments -- Spinner magnetometer -- Statistical methods for paleovector analysis -- Storms and substorms, magnetic -- Stress demagnetization -- Superchrons, changes in reversal frequency -- Susceptibility -- Susceptibility, measurements of solids -- Susceptibility, parameters, anisotropy -- Taylor's condition -- Thellier, Émile (1904–1987) -- Thermal wind -- Time-averaged paleomagnetic field -- Time-dependent models of the geomagnetic field -- Transfer functions -- Transient.

Sommario/riassunto

Understanding the process underlying the origin of Earth magnetic field is one of the greatest challenges left to classical Physics. Geomagnetism, being the oldest Earth science, studies the Earth's magnetic field in its broadest sense. The magnetic record left in rocks is studied in Paleomagnetism. Both fields have applications, pure and applied: in navigation, in the search for minerals and hydrocarbons, in dating rock sequences, and in unraveling past geologic movements such as plate motions they have contributed to a better understanding of the Earth. Consisting of more than 300 articles written by ca 200 leading experts, this authoritative reference encompasses the entire fields of Geomagnetism and Paleomagnetism in a single volume. It describes in fine detail at an assessable level the state of the current knowledge and provides an up-to-date synthesis of the most basic concepts. As such, it will be an indispensable working tool not only for geophysicists and geophysics students but also for geologists, physicists, atmospheric and environmental scientists, and engineers. The Editors David Gubbins is Research Professor of Earth Sciences in the School of Earth & Environment, University of Leeds, UK. He did his PhD on geomagnetic dynamos in Cambridge, supervised by Sir Edward Bullard (q.v.) and has worked in the USA and in Cambridge before moving to Leeds in 1989. His work has included dynamo theory and its connection with the Earth's thermal history, modeling the Earth's magnetic field from historical measurements, and recently the interpretation of paleomagnetic data. He is a Fellow of the Royal Society and has been awarded the Gold Medal of the Royal Astronomical Society and the John Adam Fleming (q.v.) Medal of the American Geophysical Union for original research and leadership in geomagnetism. Emilio Herrero-Bervera is Research Professor of Geophysics at the School of Ocean Earth Science and Technology (SOEST) within the Hawaii Institute of Geophysics and Planetology (HIGP) of the University of Hawaii at Manoa, where he is the head of the Paleomagnetism and Petrofabrics Laboratory. During his career he has published over 90 papers in professional journals including Nature, JGR, EPSL, and JVGR. He has worked in such diverse fields as volcanology, sedimentology, and plate tectonics and has done fieldwork on 5 continents.
