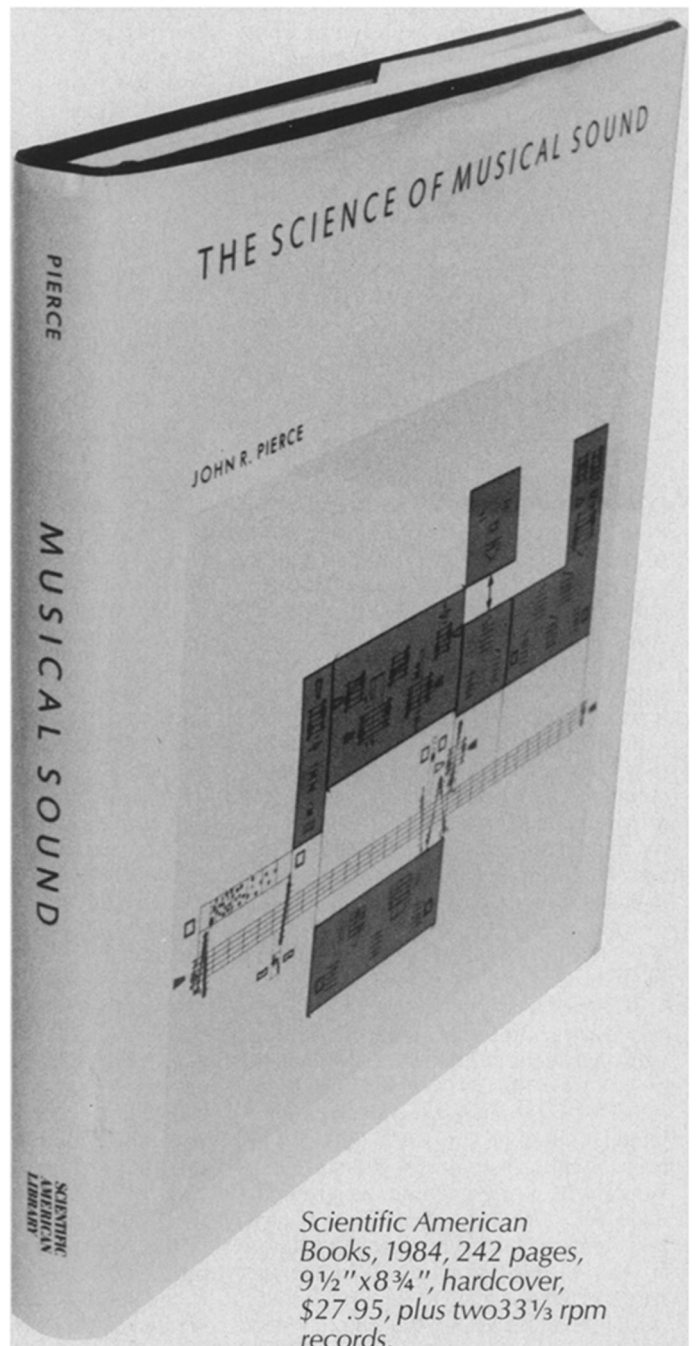


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“A brilliant analysis of why video games fascinate and intrigue us.”—*RICHARD C. ATKINSON, Chancellor, University of California, San Diego, and former Director, National Science Foundation*



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Geoffrey R. Loftus

&

Elizabeth F. Loftus

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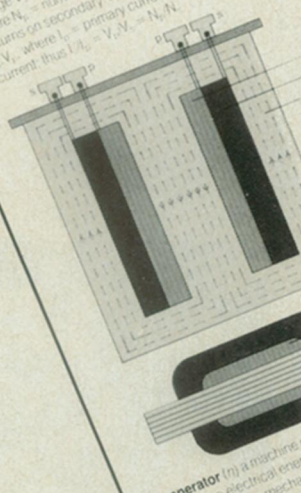
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ELECTROSTATICS FIELDS - 169

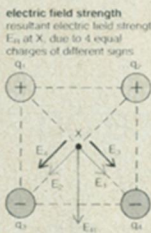
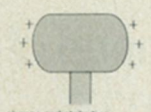
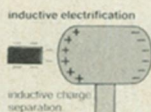
MECHANICS ENERGY 29

212 ELECTROMAGNETISM ALTERNATING CURRENT

a.c. mains transformer a device for converting a low voltage input supplying high current to a high voltage output at low current, or vice versa. With minimized energy losses, it is designed to operate on a c. current (I) drawn from the a.c. mains (p. 160), a secondary coil (S) is wound coaxially around the primary coil P on a laminated soft iron yoke core minimizing hysteresis losses (p. 187), providing a closed path for magnetic flux linkage (p. 204) and minimizing eddy currents (p. 210) for a c. mains voltage $V_p = N_p N_s$, secondary voltage V_s is given by $V_p = N_p N_s$, where N_p = number of turns on primary and N_s = number of turns on secondary, neglecting power losses $V_p I_p = V_s I_s$, where I_p = primary current and I_s = secondary current, thus $I_p = V_s I_s / V_p = N_s I_s / N_p$.



generator (n) a machine that produces electrical energy from mechanical energy, e.g. mechanical energy.

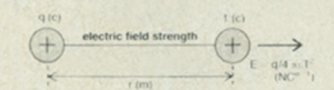


electric field strength resultant electric field strength E_{res} at X, due to 4 equal charges of different signs q_1, q_2, q_3, q_4 .

inductive charge separation when an electrically charged body is held near an electrically insulated metal body, conduction electrons (p. 9) move through the metal either towards a positive (+) inducing charge or away from a negative (-) inducing charge; if the metal is now temporarily earthed (p. 161) by touching, only the separated charge near the inducing charge is retained on the metal body.

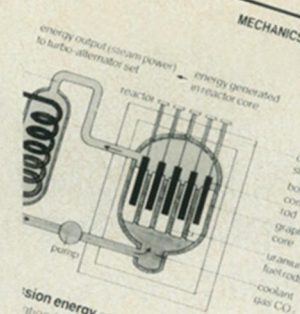
inductive electrification refers to electrification (f) of an electrically insulated metal body by inductive charge separation (f); after earthing, the inducing charge is removed and the induced charge spreads over the metal body. **induction** (n), **induce** (v), **inducing** (adj), **induced** (adj), **inductive** (adj).

electric field direction conventionally defined at a specific point in an electric field (p. 165) as the direction in which an isolated point positive (+) electric charge (p. 165) located at that point would move if it were free to do so.



electric field strength a vector quantity (p. 30) conventionally defined at a specific point in an electric field (p. 165) as the electric field force (p. 166) exerted on an isolated point positive (+) electric charge (p. 165) of value 1 coulomb (C) (p. 165) located at that point, denoted by E and measured in units of newton/coulomb (NC^{-1}), for charge q (C), force $F = qE$ (N); the field vector is tangential to an electric flux line (p. 166) at the specific point of definition, giving the electric field direction (f) at that point; the electric field strength at distance r (m) from a point + charge q (C) is given by Coulomb's Law (p. 167) from the force equation: $F = q \times 1/4\pi\epsilon_0 r^2$ (N), where ϵ_0 = electric permittivity (f) of free space, so $E = q/4\pi\epsilon_0 r^2$ (NC^{-1}) at r (m) from charge q (C). E is also defined from the potential gradient dV/dr (Vm^{-1}) (p. 170) as $E = -dV/dr$, a negative (-) sign shows that the potential V decreases in the direction of the field; units are volt/metre (Vm^{-1}); for a uniform field (p. 167), $-dV/dr = E$ is constant.

electric intensity a former name for electric field strength (f).



fusion energy energy (p. 26) released as heat under conditions in a nuclear reactor (p. 241) to produce steam to power a conventional reactor for sea and generate electricity (f) from the uncontrolled release of fission energy (p. 26) released as heat under conditions in a nuclear reactor (p. 241). **hydrogen bomb** the uncontrolled release of fission energy (p. 26) released as heat under conditions in a nuclear reactor (p. 241). **atomic bomb** the uncontrolled release of fission energy (p. 26) released as heat under conditions in a nuclear reactor (p. 241). **fusion energy** energy (p. 26) released as heat under conditions in a nuclear reactor (p. 241) to produce steam to power a conventional reactor for sea and generate electricity (f) from the uncontrolled release of fission energy (p. 26) released as heat under conditions in a nuclear reactor (p. 241). **hydrogen bomb** the uncontrolled release of fission energy (p. 26) released as heat under conditions in a nuclear reactor (p. 241). **atomic bomb** the uncontrolled release of fission energy (p. 26) released as heat under conditions in a nuclear reactor (p. 241).

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