APPLIED MECHANICS Reviews

Editorial Office Midwest Research Institute
4049 Pennsylvania
Kansas City 2, Missouri, U.S.A.

Editor Martin Goland

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THE AMERICAN SOCIETY OF MECHANICAL ENGINEERS

January 5, 1951

Dr. Mustufa Inan
Teknik Universite
Istanbul, Turkey

Dear Dr. Inan:

Your name has been suggested as a reviewer for APPLIED MECHANICS REVIEWS, and it is a great pleasure to personally extend this invitation to you. The REVIEWS is a non-profit periodical devoted to a critical coverage of the international literature in the fields of applied mechanics and related subjects. It does this by publishing critical reviews of articles and books, the reviews being written by authorities in their field of interest.

In the event you are willing to offer your cooperation, we would appreciate your checking off on the enclosed sheets the exact fields in which you would like to receive reviews. Please add subjects within your interests which are not shown on these lists. This will help to insure that we send you only those papers which are of direct concern to you. Also, please note what languages you are familiar with and whether you do or do not wish highly mathematical papers, either theoretical or experimental.

In addition to the professional recognition which comes from signing your reviews, we also are able to offer our reviewers outside the United States a free subscription to the REVIEWS.

We will indeed appreciate your cooperation and look forward to hearing from you. My very best personal regards.

Very truly yours,

Martin Goland

MG/pmg

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Published by
THE AMERICAN SOCIETY OF MECHANICAL ENGINEERS

November 16, 1950

Professor M. Inan
Professor of Applied Mechanics
Technical University of Istanbul
Istanbul, Turkey

Dear Professor Inan:

Professor Ratip Berker has suggested that you be invited to join the reviewing staff of APPLIED MECHANICS REVIEWS, and I am pleased to extend this invitation to you. As you undoubtedly know, the REVIEWS is devoted to a critical coverage of the international literature in the fields of applied mechanics and related subjects.

In addition to the professional recognition which comes from signing your reviews, we also are able to offer our reviewers outside the U.S.A. a free subscription to the REVIEWS. Of course, the compensations for this work can hardly be evaluated on a material basis; we of the editorial office can only be indebted to those who unselfishly undertake this work to advance the whole profession.

In the event you are willing to offer your cooperation, I am enclosing sheets listing topics we believe will be of interest to you. It will be appreciated if you will check off those particular subjects in which you would like to receive papers. If this list does not adequately cover your interests, please let us know in what other subjects you are willing to aid us. Also, we hope you will note what languages you are familiar with and whether you do or do not wish highly mathematical papers, either theoretical or experimental.

I do look forward to hearing from you. My very best personal regards.

Very truly yours,

Martin Goland

MG/pmg

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Professor M. Inan
Professor of Applied Mechanics
Technical University of Istanbul
Istanbul, Turkey

APPLIED MECHANICS REVIEWS

Name_____

DETAILED SUBJECT INDEX FOR APPLIED MECHANICS REVIEWS

1. GENERAL THEOR. & EXP. METHODS
(of special interest for Mech. Prob.)

_ a. Successive approx. methods
_ b. Graphical, numerical, series, other indirect integration methods; iteration methods
_ c. Calculating machines
_ d. Dimensional analysis and mechanical similitude
_ e. Physical analogies (soap films)
_ f. Statistical analysis of data, sampling
_ g. General principles for instrumentation
_ h. Matrix, vector tensor methods
_ i. Precision of measurement - theory of errors
_ j. History and philosophy of science, mechanics
_ k. Influence functions
_ l. Measurement methods
_ m. Analog computers
_ n. Perturbation methods
_ o. Nonlinear equations
_ p. Difference equations
_ q. Relaxation methods
_ r. Tables and nomograms
_ s. Theory of equations (diff., integral, etc.)
_ t. Numerical methods in arithmetical equations
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_ w. Operational methods
_ x. Variational principles
_ y. Boundary value problems
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_ aa. Conformal mapping
_ bb. Electric analogies
_ cc. Eigenvalue problems
_ dd. Special functions
_ ee. Bibliography
_ ff. Hyperbolic equations
_ gg. Autocorrelation problems
_ hh. Iterations

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_ c. Three-dimensional elasticity
_ d. Anisotropic media
_ e. Finite strain
_ f. Energy methods
_ g. Contact stresses and strains
_ h. Stress concentration factors
_ i. Thermal stresses and strains
_ j. Nonlinear media
_ k. Semi-elastic bodies
_ l. Influence functions
_ m. Initial stresses
_ n. Relaxation methods
_ o. Nonhomogeneous media
_ p. Body or dynamic forces; waves
_ q. Torsional problems
_ r. Three-dimensional solution of "plane stress" problems
_ s. Stress and strain in elasticity
_ t. Shells
_ u. Waves
_ v. Anelasticity; elastic after-effects

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_ b. Three-dimensional photoelasticity
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_ d. Optical strain gages
_ e. Electrical resistance strain gages
_ f. Miscellaneous strain gages
_ g. Brittle coatings and brittle models
_ h. X-ray strain analysis
_ i. Loading devices and force measurement
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_ l. Telemetering
_ m. Residual stress measurement
_ n. Rosettes
_ o. Analogs
_ p. Strain counters
_ q. Photoelastic materials
_ r. Grid methods
_ s. Accelerometers

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_ a. Bending, beams
_ b. Stat. indeterminate beams
_ c. Elastically supported beams
_ d. Transverse shear
_ e. Beam flanges
_ f. Torsion, shafts, beams, tubes
_ g. Center of twist or shear
_ h. Axial loads, flexible cables, etc.
_ i. Combination loading
_ j. Nonhomogeneous bars (reinforced concrete, etc.)
_ k. Varying cross sections
_ l. Curved and bent bars, crankshafts
_ m. Leaf, coil, torsion, rubber springs
_ n. Energy methods
_ o. Pipes and tubes under internal and external pressure
_ p. Center of flexure
_ q. Influence lines
_ r. Flexibility of curved tubes
_ s. Loading beyond yield point
_ t. Limit design
_ u. Relaxation methods
_ v. Slope deflection methods
_ w. Conical disc springs
_ x. Thermal stresses and strains
_ y. Piping systems
_ z. Naturally twisted rods

_ aa. Gears and gear teeth
_ bb. Dynamical loading
_ cc. Effect of residual stress
_ dd.
_ ee. Spring pivots
_ ff. Large displacements
_ gg. Shafts
_ hh. Design efficiency
_ ii. Thin-walled beams
_ jj. Laminated beams
_ kk. Screws
_ ll. Box beams
_ mm. Beams
_ nn. Noncylindrical shafts
_ oo. Crankshafts

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_ b. Shells
_ c. Membrane theory
_ d. Rotating discs
_ e. Anisotropic media
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_ h. Elastically supported plates
_ i. Concentrated loads, bearing plates
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_ k. Influence surfaces
_ l. Bourdon tubes, theory of
_ m. "Sandwich" materials
_ n. Relaxation methods
_ o. Flat or curved panels
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_ r. Corrugated diaphragms and pipes

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_ t. Pressure vessel heads
_ u. Plate and shell theory
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_ w. Stiffened cylinders
_ x. Stiffened plates
_ y. Pipes
_ z.
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_ a. Column buckling
_ b. Experiment and design formula for columns
_ c. Plates
_ d. Shells
_ e. Buckling of structural members
_ f. Lateral buckling of beams
_ g. Effect of shear deformations
_ h. Effect of initial deformations
_ i. Buckling above yield point
_ j. Effect of elastic foundation and end support
_ k. Buckling of complete structures
_ l. Effect of initial stresses
_ m. Rings and arches
_ n. General stability theory
_ o. Beams
_ p. Pipes and vessels under external pressure
_ q. Sheet-stringer panels and shells
_ r. Effective width of buckled plates
_ s. Buckling under dynamic load
_ t. Piles
_ u. Local buckling of sandwich material skin
_ v. Buckling under combination loads
_ w. Local buckling of flanges, etc.
_ x. Tension field webs
_ y. Sandwich panels, etc.
_ z. Sheet panels
_ aa. Struts
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_ cc. Plastic buckling
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_ ee. Approximate methods
_ ff. Tests

7. JOINTS AND JOINING METHODS

_ a. Riveted, bolted joints
_ b. Welds
_ c. Efficiency and static strength of joints
_ d. Initial stresses due to joints
_ e. Fatigue strength of joints
_ f. Shrink fits
_ g. Screwed joints
_ h. Keys, cotters, etc.
_ i. Effect of joints on crack propagation
_ j. Brazing and soldering
_ k. Effect of joint elasticity
_ l. Cemented joints, wood or metal
_ m. Timber connections
_ n. Stress distribution
_ o. Reinforcing bar bond

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_ a. Statically indeterminate structures, general
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_ c. Energy methods
_ d. Successive approximation
_ e. Model studies
_ f. Bents, frames
_ g. Bridges
_ h. Buildings

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- i. Sandwich constructions
- j. Airplane structures
- k. Shear lag
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- m. Landing gears
- n. Trusses
- o. Dams and retaining walls
- p. Vibrations of structures
- q. Limit design and above-elastic loading
- r.
- s. Vehicle frames and structures
- t. Impact of structures
- u. Reinforced concrete, concrete
- v. Highway construction
- w. Pre-stressed concrete, reinforced concrete precasting
- x. Inelastic deformation of structures
- y. Arches and vaults
- z. Pressure vessels
- a'. Girders
- b'. Box beams
- aa. Fatigue of structures
- bb. Piping systems
- cc. Semimonocoque
- dd. Effects of cutouts
- ee. Foundations
- ff. Built-up members
- gg. Grids of bars
- hh. Wind stresses
- ii. Large displacements
- jj. Masts, etc.
- kk. Ship structures
- ll. Pneumatic tires
- mm. Composite structures
- nn. Pits and galleries
- oo. Spiral stairs
- pp. Roofs
- qq. Iteration methods
- rr. Welded structures
- ss. Walls
- tt. Testing
- uu. Tanks
- vv. Wheels
- ww. Tunnels

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- b. Laws of onset of plastic flow
- c. Liquids and fluids
- d. Gels
- e. Creep
- f. Relaxation
- g. Strain hardening laws
- h. Residual stresses due to plastic flow
- i. Sliding glide packets
- j. Measurements
- k. Rheology
- l. Rheological measurements
- m. Relaxation methods
- n. Work hardening
- o. Yielding
- p.
- q.
- r.
- s.
- t.
- u.
- v.
- w.
- x.
- y. Energy methods
- z. Strain distribution problems

- aa. Impact loading
- bb. Internal friction, hysteresis
- cc. Numerical methods
- dd. Visco-plastic flow
- ee. Viscoelastic properties
- ff.
- gg. Elastoplastic flow
- hh. Viscoelastic flow
- ii. Effect of biaxial and triaxial stress
- jj. Dislocation theory
- kk. Ductility
- ll.
- mm.
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- oo. Effect of nuclear bombardment on ductility

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_ pp. Aging effects
_ qq. Effects of stress gradient
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_ tt. Rate of straining
_ uu. Crystalline structure
_ vv. Plastic flow tests
_ ww. Plasticity in geology
_ xx. Stress-strain laws
_ yy. Stress-temperature

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_ a.
_ b.
_ c. Effect of crystalline structure
_ d. Effect of rate of strain
_ e.
_ f.
_ g.
_ h.
_ i. Effect of temperature
_ j.
_ k. Cohesive failure
_ l. Brittle shear failure
_ m. Embrittling factors
_ n.
_ o. Biaxial and triaxial stress
_ p.
_ q. Crack propagation
_ r.
_ s. Fretting and wear
_ t. Fatigue failure
_ u. Impact failure
_ v. Size effect
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_ x. Failure theories
_ y. Fractures
_ z.

_ aa. Stress corrosion
_ bb.
_ cc.
_ dd.
_ ee. Effect of nuclear bombardment
_ ff. Mechanics of solid state

_ gg.
_ hh.
_ ii.
_ jj.
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_ ll. Effect of residual stress
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_ nn. Pitting
_ oo. Crack formation
_ pp. Plastic buckling failure
_ qq. Notch effect
_ rr. Bursting speed
_ ss. Tensile strength
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_ ww. Reversed bending
_ xx. Galvanic effects
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_ d. Grinding
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_ h. Forging

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_ b. Factors of safety and working stresses
_ c. Significance of static tests
_ d. Significance of creep, relaxation tests
_ e. Significance of impact tests
_ f. Significance of fatigue tests
_ g. Limit design
_ h. Philosophy of weldment design, significance of tests on welds
_ i. Significance of damping capacity tests
_ j. Significance of hardness tests
_ k. Significance of soil mechanics
_ l. Significance of model tests
_ m. Significance of welds
_ n. Significance of material tests, general

12. MATERIAL TEST TECHNIQUES

_ a. Tension tests
_ b. Compression tests
_ c. Torsion tests
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_ e. Bending, shear and other static tests
_ f. Creep and relaxation tests
_ g. Impact tests
_ h. Fatigue tests, general
_ i. Fatigue tests, tension-compression
_ j. Fatigue tests, rotating beams
_ k. Wear tests
_ l. High temperature tests
_ m. Low temperature tests
_ n. Testing machines and apparatus
_ o. Tests for crack detection
_ p. Speed of crack propagation tests
_ q. Damping capacity tests
_ r. Corrosion and weathering tests
_ s. Acoustic tests
_ t. Hardness
_ u. Measurement of cohesive strength of ductile materials
_ v. Photogrids
_ w. Soil tests
_ x. Transition temperature tests
_ y. Shrinkage tests
_ z. Tests for initial stresses

_ aa. Tear test
_ bb. High-pressure tests
_ cc. Transient loads
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_ ee. Elastic constants
_ ff. Weld tests
_ gg. Friction tests
_ hh. Nondestructive testing
_ ii. Toughness
_ jj. Residual stress
_ kk. Vibration techniques
_ ll. Strain measurement
_ mm. Erosion
_ nn. Rheology
_ oo. Performance tests
_ pp. Viscosity
_ qq. Forces
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- b. Compression tests
- c. Torsion tests
- d. Bending, shear, other static tests
- e. Creep and relaxation tests
- f. Impact tests
- g. Fatigue tests
- h. Temperature effects
- i. Steel
- j. Cast iron
- k. Aluminum and magnesium alloys
- l. Other nonferrous metals
- m. Concrete and masonry
- n. Wood, plywood
- o. Plastic
- o'. Rubber
- p. Fibres, fabrics
- q. Miscellaneous materials
- r. Single crystals
- s. High temperature alloys
- t. Ceramic materials and mixtures
- u. Welds and weld affected zones
- v. Internal friction, hysteresis
- w. Hardness
- x. Transient load
- y. Notch sensitivity
- z. Effect of corrosion on strength

- aa. Brittleness, ductility
- bb. Surface layers
- cc. Anisotropic materials
- dd. Coefficient of friction
- ee. Effect of grain size on crystals
- ff. Sandwich materials
- gg. Elastic constants
- hh. Heat-treatment
- ii. Stainless steel
- jj. Yield point
- kk. Surface finish
- ll. Polymers
- mm. Fracture stress
- nn. Glass
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- pp. Time effect
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- tt. Stress corrosion cracking
- uu. Hardening
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- b. Physical properties, permeability and capillarity
- c. Soil types and classification
- d. Cellular constructions
- e. Earth pressure
- f. Piling
- g. Dynamics of foundations
- h. Stability of slopes
- i. Seepage and pore pressures
- j. Soil erosion
- k. Measurements
- l. Bulkheads
- m. Methods of subsurface exploration
- n. Physical properties, general
- o. Mechanical properties, general
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- q. Stress distribution
- r. Earth dams
- s. Soil consolidation and stabilization
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- v. Soil tests
- w. Soil cement
- x. Earth subsidence
- y. Micromeritics
- z. Effect of time

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- aa. Highway and airport subgrades
- bb. Snow
- cc. Wells
- dd. Fluidization of particles in upward streams, quicksand, etc.
- ee. Soil water
- ff. Water table
- gg. Internal friction
- hh. Footings
- ii. Soil vibrations and waves
- jj. Soil failure
- kk. Heat transfer
- ll. Clay
- mm. Compaction
- nn. Experiments
- oo. Soil moisture
- pp. Soil thermodynamics

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- a. Vibration of rods (strings, cables)
- b. Vibration of plates, shells, discs
- c. Vibration of structures
- d. Vibration damping
- e. Whirling speeds, critical speeds
- f. Nonlinear vibrations
- g. Self-excited vibrations
- h. Engine vibration
- i. Propeller vibrations
- j. Vibration isolation
- k.
- l. Vehicle suspension
- m. Internal hysteresis of materials
- n. Vibration instruments
- o. Balancing machines
- p. Balancing of rotating parts
- q. Balancing of engines, etc.
- r. General theory of steady oscillations
- s. Electrical network analogy
- t. Transients in vibration
- u. Vibration of turbine blades
- v. Tracking of rail vehicles
- w. Vibration of musical instruments
- x. Ship hull vibrations
- y. Vibrations of wheels
- z. Vibrations; hydraulic

- aa. Resonance and stability
- bb. Vibrations of shafts
- cc. Vibrations of fluids
- dd. Vibration of foundations
- ee. Crystals
- ff. Harmonic analysis
- gg. Three-dimensional vibrations
- hh. Relaxation
- ii. Approximation methods
- jj. Coupling
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- mm. Vibrations of airplane and vehicle wheels
- nn. Bending vibrations
- oo. Free vibrations
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- qq. Vibration measurements
- rr. Frequencies
- ss. Quasi-harmonic vibrations
- tt. Critical speed
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- b. Impact, general
- c. Water hammer, Diesel inj. system, etc.
- d. Induction and exhaust pipe shocks
- e. Shocks in trains, tows, etc.
- f. Impact of almost rigid bodies
- g. Surface waves
- h. Waves in open channels

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_ i. Shock damage and prevention of
_ j. Propagation of plastic waves
_ k.
_ l. Shock isolation and absorption
_ m. Plane landing impact
_ n. Bending impact
_ o. Hydraulic jump
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_ f. Sound absorption
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_ h. Sonic exploration
_ i. Instruments for measuring sound
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_ k. Reverberations
_ l. Sound velocity
_ m. Sound in solids
_ n. Propagation of waves in crystals
_ o. Noise, general
_ p. Airplane noise
_ q. Resonance of sound
_ r. Interface phenomena
_ s. Loud speakers (orifices)
_ t. Dispersion
_ u. Noise of machinery
_ v. Diffraction
_ w. Measurements
_ x. Sound fields
_ y. Second sound
_ z. Theory of sound

_ aa. Acoustic waves
_ bb. Acoustical properties of materials
_ cc. Noise control
_ dd. Sound in liquids

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_ b. Wing flutter
_ c.
_ d. Propeller, helicopter rotor flutter
_ e. Speed of divergence
_ f. Vibration of structures in wind
_ g. Musical wind instruments
_ h. Aeroelastic effect on stability and control
_ i. Aeroelastic effect on air load distribution
_ j. Stalling flutter
_ k. Empennage and control surface flutter
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_ m. Flutter of blades

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- e. Energy methods
- f. Accelerometers
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- i. Motion of particular systems
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- k. Centrifugal separators
- l. Dynamic landing loads
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- n. Statics
- o. General theory of dynamic systems
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- q. Force and power
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- t. Analytical dynamics
- u. Pendulum
- v. Transmission belts
- w. Measurements, (acceleration, etc.)
- x. Nonlinear mechanics

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- a. Gyroscopics
- b. Gyroscopic equipment
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- g. Instruments using gyroscopes

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- e. Controls
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- n. Jet propelled aircraft
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- aa. Effects of jets on stability
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- ee. Finned projectiles
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- gg. Downwash and upwash
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- ii. General wing theory
- jj. Aero coefficients of projectiles
- kk. Icing
- ll. Compressibility effects in flight
- mm. Aerodynamic coefficients of planes