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- Arrangement for the Autonatic Calculation of Networks of Impedances.—Abélés, pp. 279–280.
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- Barrow, p. 611. Barrow, p. 611. Subharmonic Frequencies Produced in Non-Linear Systems.—W.
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- Comparison between "Capacity" and "Self-Inductance" Connections, etc.].—H. Straub, **p. 33**. Mechanical Model for the Deunostration of "Kipp" Phenomena in New Yinger Circuits with Saturated Chokes.—W. Volkers, **p. 204**.
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- [Control of any Item independent of the Loudness of the Others]. —P. E. Klein, p. 558. A Universal Antenna Coupling System for Modern Transmitters : All-Band Operation with any Antenna : Improved Efficiency : Reduced Harmonic Output.—A. A. Collins, p. 205. Tritet Multi-Band Crystal Control : a Universal Five-Band [1.75-28 Mc/s] Transmitter Exciter Unit..—J. J. Lamb, p. 34. A One-Tube Crystal-Control Transmitter : Practical Two-Band Operation with One Crystal ["Tri-Tet" Oscillator Circuit].—G. Grammer, p. 321. Grammer, p. 321.
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- The behaviour of the Sen-Exching Oscinator inoutlated in 18 Grin Circuit [Pilodynatron and Meissner Circuits].—J. Groszkowski and Z. Jelonek, p. 438. The Inner-Grid Dynatron and the Duodynatron [using Secondary Emission from Inner Grid of Tetroide: Duodynatron giving Simple One-Valve Beat-Frequency Oscillator].—T. Hayasi,
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- Experimental and Analytical Studies of Negative-Resistance Oscillators by means of Secondary Electrons [Dynatrons and Duo-dynatrons].—T. Havasi, p. 813.
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- Licothear Means.—E. Divoire and P. Baudoux, p. 320.
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- Note on the Synchronisation of Broadcast Stations WJZ and WBAL. —Norton, p. 631.
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- The Protection of Broadcast Reception against Industrial Inter-ference.—P. Baize, p. 321. The Caupaign against Broadcast Interference in Baden-Baden.— Eppen and Sontag, p. 439. German P.O. Results in treating Cases of Interference, p. 615. Undisturbed Broadcast Reception: the Elimination of Industrial Interference [Book Review].—E. Schwaudt, p. 321. Practical Protection of Broadcast Receivers against Interference [Book Review].—H. Ike, p. 499.
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- A Practical Test Method of Measuring the Strength of Interference with Broadcast Reception.—F. Conrad and H. Reppisch, p. 380. A Measuring Method for the Comparative Estimation of Broadcast Interference [for Judging the Efficacy of Interference-Quenching Measuring the Effectiveness of Interference-Quenching Appliances [and a Special Design for Extending the Action to Short Wave-lengths].—E. Muller, p. 559. Measurements of the Transference of Interference from the Public Supply Network to Broadcast Receiving Acrists —F. Frence and
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- A common Source of Error in Measurements of Receiver Selectivity [Increase of Thermal Agitation "First-Circuit Noise" by presence of Input Signal).—E. N. Dingley, Jr., p. 381.
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- In Adoock-Aerial Radio-Range Beacons and in Directive Broad-casting].—H. Roder, p. 324.
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  High-Frequency [Carrier-Current] Telephony on Lines, with Short Carrier Waves [5 000 n to 40 n: Application to Television Transmission on Overhead Lines].—Kirschstein and Laub,
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- pp. 159-160. Carrier-Frequency Telephony on Several Two-Wire Circuits on the Same Standards.—Feldtkeiler, p. 110. The Use of the Cathode-Ray Oscillograph in Locating Faults in Lines and Cables.—Cremer-Chapé and J. Röhring, p. 340. The Recording of [Physiological ]Action Currents with the Cathode-Ray Oscillograph.—Schmitz, p. 456. American Researches with High-Speed Cathode Rays and X-Rays.
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- Bhattacharya, p. 224. The 9th "Deutsche Physiker- und Mathematikertag" in Würz-burg, 1933, p. 111. Recent Developments Set Pace for Progress in 1934 [Broadcast Facsimile Newspapers : Photocells in Industry : Guard Rays : "Space Control Systems" (Electrostatic or Electromagnetic
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- The Engineer and Modern Civilisation [custave Canet Lecture].— Smith, p. 632. Should Engineers take up Esperanto ?—Dejean, p. 224. Developments in Radio Engineering at the 10th Radio Exhibition, Paris, 1933.—Adam, p. 167. The Official Special Exhibits at the 10th German Radio Exhibition. —Kette, p. 54. Berlin Radio Exhibition, 1933, p. 54. French Physical Society's Annual Exhibition, 1934, p. 397. Radio Novelties at the Leipzig Spring Fair [Exhibition] 1934.— Cross p. 387.

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#### Miscellaneous-

- The Circle of Frequencies.—Pöschl, p. 110. Tables of Functions [with Curves and Diagrams: in German and English].—Jahnke and Einde, pp. 283 and 515. "Funktionentheorie und ihre Anwendung in der Technik" [Book Review].—Rothe, Schottky and others, p. 339. Electrical Methods of Geophysical Prospecting.—Bruckshaw, p. 284.
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- The VII International High Voltage Conference in Paris, 1933, Feiner, p. 54. A Latent Image Mechanism [applicable to Astronomy, Biology, etc.: New Development of Iconoscope].-Zivorykin, p. 284. I.E.E. Wireless Section : Chairman's Address.-Shearing, p. 283. On the Effects of Electromagnetic Induction between Power and Communication Lines.-Fallou, p. 339. Inductive Interference from E.H.T. Lines.-Josephs: Jackman, n. 110.
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- Works and Researches of the Laboratoire National de Radiočiectricité in 1933.—Gutton. p. 340.
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- Systems taking into Account the Axie Mass. Retremacket, pp. 110 and 456. The Self-Control of Mechanical Oscillation Systems by Retroaction. —Spath. p. 398. Calculation of the Internal Forces developed in Mechanical Systems submitted to Electrodynamical Forces. —Eigermann, p. 455.

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- Alternating Current Conductance and Direct Current Excitation of Nerve. -Cole, p. 284. Collisions of Neutrons with Atomic Nuclei [Possible Application to cosmic-Ray Bursts].—T. W. Bonner, p. 435. Calculation with the Heaviside Operational Calculus [Letter prompted by Book Review].—van der Pol: Herg, p. 515. On the Operational Treatment of Certain Mechanical and Electrical Problems [including Electrical Oscillations in Transmission Lines].—Lowan, p. 455. Orientation Mechanism [Directing Itself at a Moving Light Source]. —Rubenstein: Miessner, p. 111. A Method for the Solution of Oscillation Problems by Matrices.— Duncan and Collar, p. 397. The De-Electrification of Air by Brush-Discharge Equipment].— Lorenz Co., p. 578.

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- tine, Goldsmith and others, p. 167. "Theory of Radio Communication. Post Office Engineering Department, Technical Instructions" [Book Review], p. 515. Radio Research in 1933.—Watson Watt, p. 283. "Report of the Radio Research Board for the Period 1st January, 1932, to 30th September. 1933" [Hook Review], p. 515. Radio Statistics and Markets in 1933], p. 340. The Progress in Radio Technique and Radio Communications during 1033 p. 515.

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- cambre, p. 515. International Physical Chemistry Reunion, Paris, 1933 [Semi-Conductors.etc.].—Wilson, Joffé and others, p. 167. A Rapid Method for the Summation of a Two-Dimensional Fourier Series.—Beevers and Lipson, p. 339. Effects of [Short] Radio Waves Greatest on Dilute Solutions [with a Bearing on the Effects on Cancerous Tissues].—Donnelly, p. 110. Short-Wave Wireless Communication [Book Review].—Ladner and Stoner, p. 283. Short Waves in Medicine [with Literature References].—Hartleb, p. 224.
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- -Keinath, p. 573
- Observations on the Terminology in New Discoveries .- Blondel,
- Observations on the **retrinuology** in New Discoveries.—Diondel, **pp.167** and **397**. A New **Thermal** Principle of Measurement [Ultra-Micrometer Method].—Reiss, **p.278**. Amplifiers used to study Currents produced by **Thoughts**.—Max,
- p. 284. The Electrical Indication and Registration of Torques [by Capacity-
- Change Methods].—Rolf, p. 168. Vehicle-Operated Traffic Control.—Jaekel, p. 224. Photoelectric Train Control [tested on German Railways].—van
- Steeven, p. 398. Communication for Freight Trains.—G.E.C., p. 167. A Portable Transparency Measuring Instrument.—Westinghouse,
- p. 111. lectric "Ear" solves Tyre-Design Problem.—Goodrich Company, Electric
- p. 456.
- p. 496. Measurement of the Heating of Liquids in the [Ultra-] High Fre-quency Condenser Field.—Malov, p. 168. Radiometric Condensers and Inductances for the Ultra-Micro-metric Measurement of Heat Radiations.—Blake, p. 111.
- The
- he Measurement of Pressures in Stamping Processes, using an Ultra-Micrometric Device based on the Pressure Magnetis-ability Effect in Steel/Nickel Alloys.—Dolezalek : Janovsky,
- ability Effect in Steel/Nickei Anoys.—Polezarea, palorsay, p. 573. A Simple High-Frequency Method of Measuring Small Movements [Ultra-Micrometer using Retroactive Coupling Change in Huth-Kuhn Oscillator].—Fricke, p. 397. Capacity-Change Ultra-Micrometric Method of Studying the Vibra-tion of Large Bells.—Obata and Tesima, p. 573. Ultra-Micrometric Devices [for Industrial Control Purposes] using Rectifiers.—Pfannemuller, p. 516. "Absorbomicrometric Measurements [with the Absorption Ultra-

- Absorbomicrometric Measurements [with the Absorption Ultra-Micrometer] and Their Practical Applications in Civil Engineer-ing "[Book Notice].—Santo Rini, p. 54.

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- Ultra-Micrometric Methods in Industry (Paper Spinning, etc.) using the Air Jet Boiometer.—Sell, p. 340. Ultra-Micrometric : see also Capacity. Condenser, Curvature, Elastograph, Extensometer, Flaws, Magnetic, Piezo, Rubber, Temperature, Thermal, Torques, Vibrations, Wood.

- I emperature, 1 hermal, Torques, Vibrations, Wood.
   The Development of Ultra-Short-Wave Therapy.—Holzer, p. 284,
   The Rôle of the Structure of Tissues in Their Heating by Ultra-Short Waves.—Hellenek, p. 398.
   Selective Warming of Cellular Structures by Ultra-Short Electromagnetic Waves.—Malov, p. 224.
   Investigation of the Dielectric Behaviour of Simple Riological Substances in the Region of Undamped Ultra-Short Waves.—May and Schaefer, p. 224.
   [Ultra-Short-Wave] Oscillator kills Grain Weevils in Few Seconds.—Maymate ff. p. 240.
- Mourontseff, p. 340. Dental Decay Bacteria killed by Ultra-Short Waves.—Oartel and
- Wolf, p. 458. Reply to the Paper by N. N. Malov : "The Question of the Selec-tive Warming of Tissue by Ultra-Short Waves."—Pätzold, p. 456. New Apparatus for Ultra-Short-Wave Therapy.—Patzold, p. 516.
- Destruction of Insects by Ultra-Short Waves [on Baltimore and Ohio Railway].—Pfeiffer : Davis, p. 110. On the Physiological Effects of the Ultra-Short Wave.—Sasada,
- p. 516. Biological Effects of Short and Ultra-Short Waves.—Schereschewsky, p. 110.
- The Dielectric Constant and Absorption of Several Organic Fluids
- at 1.82m (Ultra-Short Wavelengths).—Szymanowski, p. 340, Ultra-High and Ultra-Short : see also Chemical, Disease, Dispersion,
- Medicine, Micro Modulation, Short. A Portable Ultra-Violet Intensity Meter, consisting of a Balanced Amplifier, Photoelectric Ceil, and Microammeter.—Coblentz
- Ampuner, Photoelectric Ceri, and Microanneeter.—Couchtz and Stair, p. 284. An Ultra-Violet Photoelectric Spectrophotometer.—Follett, p. 516. New Algebraic Method for the Vectorial Calculation of Alternating Currents.—Biondel. p. 455. On the Electrical Method of Measuring Small Vibrations, and Its International Content of Vibrations of Alternation

- Currents.—Biondel. p. 455. On the Electrical Method of Measuring Small Vibrations, and Its Application to the Measurement of Vibrations of Airscrew Blades.—Obata. Morita and Yoshida, p. 516. A Propeller-Vibration Indicator.—Dryden and Tuckerman, p. 516. Investigations on Rubber-Damped Railway Wheels with the Rent-linger Universal Vibration Meter. p. 168. The 'Vistaphone.".—Oranges. p. 167. Electronic Aids to Voice Culture, p. 516. Photoelectric Water Hardness Meter, p. 111. Hysteresis of the Valve Generator at Different Heights of Flight in Aircraft : Determination of Height and Detection of Water]. —Löwy, p. 111. Water Wave Telephony—Transmission of the Voice by Mechanical Oscillations.—Marro, p. 167. Vacuum-Tube Device for testing Welds.—Batcheller, p. 168. Bridge Method of Testing Welds.—Batcheller, p. 168. Bridge Method of Testing Welds.—Batcheller, p. 168. Bridge Method of Testing Welds.—Batcheller, p. 168. Bridge Method.—Barkas, p. 633. The Determination of the Moisture Content of Wood [including the Ultra-Micrometric Method].—Rankin, p. 340. Investigations on the Action of a High-Frequency X-Ray Equip-ment.—Heyde and Saupe, p. 398. Comparing Effects of 200 and 700 kv X-Rays and Gamma Rays : Intensities determined by Ionisation Chamber Measurements using Valve Voltmeter and Radium Proparation High Resistor, p. 110. p. 110.