may 1957

the institute of radio engineers

Proceedings of the IRE

PART II

INDEX TO ABSTRACTS AND REFERENCES

1956

WRH

BOARD OF DIRECTORS, 1957
J. T. Henderson, *President*
Yasujiro Niwa, *Vice-President*
W. R. G. Baker, *Treasurer*
Haraden Pratt, *Secretary*
D. G. Fink, *Editor*
J. D. Ryder, *Senior Past President*
A. V. Loughren, *Junior Past President*

1957
J. G. Brainerd (R3)
J. F. Byrne
J. J. Gershon (R5)
A. N. Goldsmith
A. W. Graf
W. R. Hewlett
R. L. McFarlan (R1)
Ernst Weber
C. F. Wolcott (R7)

1957–1958
H. R. Hegbar (R4)
E. W. Herold
K. V. Newton (R6)
A. B. Oxley (R8)
F. A. Polkinghorn (R2)
J. R. Whinnery

1957–1959
D. E. Noble
Samuel Seely

●

George W. Bailey, *Executive Secretary*

●

John B. Buckley, *Chief Accountant*
Laurence G. Cumming, *Technical Secretary*
Evelyn Benson, *Assistant to the Executive Secretary*
Emily Sirjane, *Office Manager*

EDITORIAL DEPARTMENT
Alfred N. Goldsmith, *Editor Emeritus*
D. G. Fink, *Editor*
E. K. Gannett, *Managing Editor*
Helene Frischauer, *Associate Editor*

ADVERTISING DEPARTMENT
William C. Copp, *Advertising Manager*
Lillian Petranek, *Assistant Advertising Manager*

EDITORIAL BOARD
D. G. Fink, *Chairman*
E. W. Herold, *Vice-Chairman*
E. K. Gannett
Ferdinand Hamburger, Jr.
T. A. Hunter
A. V. Loughren
W. N. Tuttle

Responsibility for the contents of papers published in the PROCEEDINGS of the IRE rests upon the authors. Statements made in papers are not binding on the IRE or its members.

Change of address (with 15 days advance notice) and letters regarding subscriptions and payments should be mailed to the Secretary of the IRE, 1 East 79 Street, New York 21, N. Y.

All rights of publication, including foreign language translations are reserved by the IRE. Abstracts of papers with mention of their source may be printed. Requests for republication should be addressed to The Institute of Radio Engineers.

PROCEEDINGS OF THE IRE®

Published Monthly by

The Institute of Radio Engineers, Inc.

VOLUME 45 — *May, 1957* — NUMBER 5, PART II

PART II

INDEX TO ABSTRACTS AND REFERENCES 1956

CONTENTS

	Page
Cross Reference to Abstracts in Proceedings	2
Abbreviations Used in the Index	2
Symbols Used in the Index	2
Author Index	3
Subject Index	21
Errata	32
List of Journals	33

This index is reprinted from the March, 1957 issue of *Electronics & Radio Engineer* (Incorporating *Wireless Engineer*), London, England and covers Abstracts and References published monthly in PROCEEDINGS OF THE IRE from February, 1956 through January, 1957.

Copyright©, 1957, by the Institute of Radio Engineers, Inc.

PROCEEDINGS OF THE IRE May, 1957, Vol. 45, No. 5, Part II. Published monthly by the Institute of Radio Engineers, Inc., at 1 East 79 Street, New York 21, N.Y. Price per copy: members of the Institute of Radio Engineers, one additional copy, $1.25; non-members $2.25. Yearly subscription price: to members, one additional subscription, $13.50; to non-members in United States, Canada and U.S. Possessions $18.00; to non-members in foreign countries $19.00. Entered as second class matter, October 26, 1927, at the post office at Menasha, Wisconsin, under the act of March 3, 1879. Acceptance for mailing at a special rate of postage is provided for in the act of February 28, 1925, embodied in Paragraph 4, Section 412, P. L. and R., authorized October 26, 1927.

Cross References to Abstracts Published in Proceedings

Abstract Numbers	*Issue of Proceedings*	*Pages*
1– 304	February, 1956	278– 292
305– 640	March	438– 452
641– 960	April	582– 596
961–1268	May	719– 732
1269–1600	June	846– 860
1601–1927	July	958– 972
1928–2270	August	1085–1100
2271–2596*	September	1214–1228
2597–2928	October	1502–1516
2929–3265	November	1646–1660
3266–3598	December	1900–1914
3599–3902	January, 1957	115– 128

* Abstract Nos. 2588–2592 correspond to Nos. 2587–2591 in PROCEEDINGS.
Abstract Nos. 2594–2596 correspond to Nos. 2592–2594 in PROCEEDINGS.
Abstract Nos. 2587 and 2593 did not appear in PROCEEDINGS.

Symbols used in the Index

(A) Abstract, (B) Book Review, (C) Note of Correction, (D) Discussion

Abbreviations used in the Index

a.c.	= alternating current	c.w.	= continuous wave
d.c.	= direct current	i.c.w., m.c.w.	= modulated c.w.
h.v.	= high voltage		
l.v.	= low voltage	s.w.*	= short wave
a.f.	= audio frequency	u.s.w.*	= ultra short wave
i.f.	= intermediate frequency	λ	= wavelength
r.f.	= radio frequency, including :—	c.r.	= cathode ray
v.l.f.	= very low frequency, <30 kc/s	c.r.o.	= cathode ray oscilloscope
l.f.	= low frequency, 30–300 kc/s	d.f.	= direction finding
m.f.	= medium frequency, 300–3000 kc/s	e.m.	= electromagnetic, *but*
h.f.	= high frequency, 3–30 Mc/s	e.m.f.	= electromotive force
v.h.f.	= very high frequency, 30–300 Mc/s	a.f.c.	= automatic frequency control
u.h.f.	= ultra high frequency, >300 Mc/s	a.g.c.	= automatic gain control
a.m.	= amplitude modulation	a.ph.c.	= automatic phase control
f.m.	= frequency modulation	a.v.c.	= automatic volume control
p.m.	= pulse modulation, including :—	m.u.f.	= maximum usable frequency
p.a.m.	= pulse amplitude modulation	p.p.i.	= plan position indicator
p.c.m.	= pulse code modulation	s.s.b.	= single sideband
p.f.m.	= pulse frequency modulation	d.s.b.	= double sideband
p.ph.m.	= pulse phase modulation	s.w.r.	= standing wave ratio
p.p.m.	= pulse position modulation	v.f.o.	= variable frequency oscillator
p.w.m.	= pulse width modulation	R/T	= radiotelephony
ph.m.	= phase modulation	W/T	= wireless telegraphy
v.m.	= velocity modulation	TV	= television

* No clearly defined limits

AUTHOR INDEX

A name followed by "and" is that of the first author of a jointly written paper, while the word "with" indicates that the name indexed is that of the second author.

A

Abdel-Halim Ahmed. See Ahmed, Abdel-Halim.
Abe, H., with others, magnetic resonance in α-Fe_2O_3, 486
Abe, R., Barkhausen pulses in Rochelle salt, 2774
Abe, S., with T. Nagata, distribution of SC* in high latitudes, 106
Abe, Y., with others, observation of nuclear resonances with coaxial-cavity spectrometer, 1696
Abel, W. G., and others, ionospheric propagation at frequencies exceeding m.u.f., 245
Abeles, B., and S. Meiboom, galvanomagnetic effects in Bi, 2141
Abel's, V. R., with Ya. S. Shur, Si-Fe crystals, magnetic structure of, 824, nucleation centres in, 1464
Abetti, P. A., G. E. Adams and F. J. Maginniss, oscillations of coupled windings, 1636
Abgrall, C., cell for measurement of dielectric constant, 1814
Abrikosov, N.Kh., and V. F. Bankina, thermoelectric properties of $CrSb_2$, 3773
Abson, W., and F. Wade, nuclear-reactor-control ionization chambers, 3838
Accardo, C. A., with S. Kronenberg, dielectric changes in inorganic phosphors, 2406
Adams, A., Jr, with others, surface states on Si and Ge surfaces, 2434
Adams, A. M., chemical generation and storage of electricity, 2224
Adams, D. P., three-dimensional nomograms, 510
Adams, E. N., and P. N. Argyres, acceleration of electrons by external field, 3332
Adams, G. E., with others, oscillations of coupled windings, 1636
Adel, A., with others, atmospheric ozone as function of height, 3044
Adelsberger, U., rod wavemeter, 2494
—— with others, quartz clocks at the Physikalisch-Technische Bundesanstalt, 3468
Adey, A. W., diffraction by metal cylinders, 400
Adirovich, E. I., generalized admittances for various triode connections, 2327
—— and G. M. Guro, times of electronic processes in semiconductors, 3414
—— and V. G. Kolotilova, transfer characteristics of semiconductor triodes, 1892; propagation of pulse in semiconductor, 3243
Adler, F. P., missile guidance by 3-dimensional proportional navigation, 3177
Adler, R., O. M. Kronhout and P. A. Clavier, transverse-field travelling-wave valves, 1252
Agranovskaya, A. I., with others, high permittivity of niobates and tantalates, 3402; ferroelectric properties of stannates, 3405
Agy, V., ionospheric effects produced by solar-flare radiation, (D)3376
Aharoni, A., E. H. Frei and G. Horowitz, circuit element using magnetoresistive effect, 1319
Ahmed, Abdel-Halim, circuit for measurements, 2488
Aigrain, P., and J. des Cloizeaux, effective mass of electrons in InSb, 815
—— C. Rigaux and J. M. Thuillier, thermomagnetoelectric effects in InSb, 2120
Ainsworth, J., with H. E. LaGow, upper-atmosphere measurements with rockets, 2377
Airapetyants, S. V., with others, semiconductor thermocouples, 2430
Aiya, S. V. C., and K. R. Phadke, atmospherics interference at Poona, 1202
Aiyama, Y., with others, uniaxial anisotropy in Fe-Co ferrites, 1467
Akabane, K., with others, solar enhanced region at cm λ from eclipse observations, 2043
Akasofu, Syun-ichi, thermal upward flow in ionosphere, 1048; geomagnetic control of F_2 layer, 3051
Akçasu, Z., amplitude limitation in *LC* oscillators, 2667
Akhiezer, A. I., and G. Ya. Lyubarski, theory of coupled cavity resonators, 2655
—— and A. G. Sitenko, plasma oscillations in external field, 3018
Akima, H., with K. Kawakami, time constants of detectors in noise measurements, 1864; measuring radio noise voltage, 3137
Akulov, N. S., magnetic moments of ferromagnetic materials, 1779; magnetostriction of Ni single crystals, 2143; theory of ferro-, para- and ferri-magnetism, 3797
Albin, A. L., and J. McManus, interference control in aircraft, 1539
Alekseevski, N. E., N. B. Brandt and T. I. Kostina, galvanomagnetic properties of Bi, 1472
Aléonard, R., J. C. Barbier and R. Panthenet, properties of yttrium ferrite, 3114
—— with J. C. Barbier, paramagnetism of rare-earth ferrites, 1789
Alexander, E., with others, influence of alternating electric fields on light emission of phosphors, 446; recombination on Ge surfaces, 2442
Alexander, N. E., with others, aerosoloscope counts particles in gas, 1836
Alexander, W., tolerance limits in matching, 1985
Alfrey, G. F., and J. B. Taylor, electroluminescence in ZnS, 781
Alfvén, H., sun's general magnetic field, 2714
Alkemade, C. T. J., with R. J. J. Zijlstra, flicker noise in photoelectric diodes, 3569
Allan, A. H., D. D. Crombie and W. A. Penton, frequency variations in New Zealand of transmissions from GBR, 1482
Allanson, D., with others, underwater television camera, 1226
Allcock, G. McK., ionospheric absorption at l.f. and m.f., 755; prediction of m.u.f.s, 3196
—— with M. G. Morgan, observations of whistling atmospherics, 1724
Allen, C. P., and G. M. Clarke, wavelength measurements on tape helices, 2284
Allen, D. N. de G., application of relaxation methods of computation, 3821
Allen, J. W., properties of dislocations in Ge, 3428
—— and I. M. Mackintosh, implications of small energy gap and electron mass in InSb, 145
—— and K. C. A. Smith, electron microscopy of etched Ge surfaces, 1447
—— with I. M. Mackintosh, lifetime of carriers in InSb, 1773
Allen, R. B., and H. E. Farnsworth, effect of ion bombardment of Ge on point-contact rectification, 3240
Allen, T. K., R. A. Bailey and K. G. Emeléus, appearance of oscillating discharges, 633
—— with K. G. Emeléus, plasma-electron oscillations, 86
Allen, V. H., laboratory equipment for quantizing speech, 1540
Allen, W., with others, spectral energy distribution of ZnS-Ag and ZnCdS-Ag, 2762
Allison, F. E., and E. M. Pugh, temperature dependence of Hall coefficients in Cu-Ni alloys, 3801
Allison, J., and F. A. Benson, attenuation of ferromagnetic waveguides, 2288
Almond, J., and A. R. Boothroyd, transistor feedback amplifiers, 1347
Alston, L. L., voltage divider containing nonlinear unit, 2490
Altaiski, Yu. M., with N. A. Gozhenko, resistance of metal/semiconductor contact, 3441
Altman, F. J., and W. Siebak, simplified diversity system for beyond-horizon links, 3185
Ambolt, N., with J. Egedal, effect on geomagnetism of solar eclipse, 107
Ament, W. S., and M. Katzin, fluctuations in long-range over-water propagation, 3185
van Amerongen, C., with others, dielectric losses of quartz, 451
Ames, L. A., P. Newman and T. F. Rogers, v.h.f. tropospheric over-water measurements far beyond horizon, 234
Amman, F., and L. Dadda, design of pole faces for circular particle accelerators, 2503
Anan'eva, A. A., nondirectional ceramic sound receivers, 3275
Anderson, A. E., with others, post-deflection-focus colour kinescope, 3894
Anderson, A. G., and others, spin-echo storage, 1038
Anderson, G. P., 2-m transmitter-convertor, 1214
Anderson, J. C., phase comparator, 1505
Anderson, J. M., and L. Goldstein, interaction of e.m. waves in plasma, 1383; collision cross-section of He for slow electrons, 3351
Anderson, L. J., and E. E. Gossard, prediction of oceanic duct propagation, 2876
Anderson, P. A., and A. L. Hunt, work function of Pb, 3112
Anderson, P. W., ordering and antiferromagnetism in ferrites, 3454
—— and H. Hasegawa, considerations on double exchange, 1117
—— with others, line width in ferromagnetic resonance, 2033; new low-temperature ferromagnets, 3804
Anderson, R. E., and others, telemetering aerial system for supersonic aircraft, 2623
Anderson, R. S., with others, 3-mm-λ radiation from sun, 740
Anderson, S. P., with W. Susksmith, general-purpose electromagnet, 3711
Andrä, W., and E. Schwabe, rendering elementary magnetic domains visible, 1121
André, P., I. Kazes and J. L. Steinberg, atmospheric absorption at 9·35 kMc/s, 2737
Andrescluni, V., measurement of magnetic field, 2485
—— and D. Sette, nuclear-resonance meter for magnetic flux, 3480
Andrew, J. F., infrared response of pyrolyzed organic films, 3394
Andrews, D. H., with others, cathode-ray recorder, 2263
Andrieux, G., passive reflectors for radio beams, 1964
Andrievski, A. I., and M. T. Mishchenko, growth of Cu_2O crystals at high temperature, 2799; occlusions of CuO in Cu_2O layers, 3105
—— and V. A. Zhuravlev, photoconductivity of SnO_2, 3396
Andrus, J., with W. L. Bond, photographs of edge dislocations, 2438
Angelov, A., with others, self-sustained electronic spokes in magnetrons, 1587
Angles d'Auriac, H., colour television, 2891
Anisimov, E. V., and N. M. Sovetov, propagation along helical strip, 2955
Ankel, T., propagation of optical-type signals in dispersive medium, 2365
Anslow, N. G., navigation aids for Bristol Britannia, 2073
Antenen, K., mechanism of electrets, 1797
Antonov-Romanovski, V. V., and L. A. Vinokurov, reduction of luminous output of phosphors, 3079
Aono, Y., and K. Muramatsu, field intensity of ground wave over mixed paths, 542
Aoyagi, K., with others, domain structure in cubic solid solutions, 3802
Apfel, J. H., and L. N. Hadley, exciton absorption in Cu_2O 1769
Apker, L., with E. Taft, photoelectric emission from graphite, 771
Appel, J., properties of Ag_2Te, 2801
Appelt, O. H., K. Christ and K. Schmid, microwave television radio relay, 2546
Appleton, E. V., and A. J. Lyon, ionospheric layer formation under quasi-stationary conditions, 755
—— and W. R. Piggott, storm phenomena and solar-cycle variations of F_2 layer, 755
—— A. J. Lyon and A. G. Pritchard, detection of S_q current system in ionosphere, 1049
—— A. J. Lyon and A. G. Turnbull, distortion of E layer by electrical currents, 752
Arai, M., with T. Takahashi, wide-band v.h.f. wattmeter, 534
—— with others, measurement of spurious emissions, 1811
Arai, Y., with others, 40–50-Mc/s overtone quartz units, 2330
Arato, H., with others, dissociation of BaO under electron bombardment, 3260
Arbon, R. S., and G. Phyllp-Jones, ferroresonant computing circuits, 2647
Archard, G. D., chromatic correction for electron lenses, 1180
Archbold, R. B., with D. L. Richards, development of Collard principle of articulation calculation, 3873
von Ardenne, M., precision c.r.o., 1495
Argence, E., propagation in ionized media, 755
Argentieri, D., gravitational influence of Jupiter, 3040
Argirovic, M., influence of temperature and humidity on electrical constants of ground, 102; phase constant of ground wave, 544
Argyres, P. N., with E. N. Adams, acceleration of electrons by external field, 3332
Arima, Y., with others, wave reflected from ionosphere, field strength of, 900, divergence factor of, 1849
Armitage, M. D., battery-operated oscillators and detectors for a.c. bridges, 529
Armstrong, H. L., simplified approach to hysteresis, 2346; bistable circuits using triode-pentodes, 2999
Armstrong, L. D., C. L. Carlson and M. Bentivegna, *p-n-p* transistors using high-emitter-efficiency alloys, 2563
Arnal, R., microdischarges in vacuum, 1025
Arnold, A. H. M., Ni-Cr-Al-Cu resistance wire, 3085
—— with H. D. Hawkes, wattmeters, 1168
Arnold, R., recent investigations on graphite, 803
Aron, J., and G. Groetzinger, photomagnetoelectric effect in Ge, 1449
Arrazau, J., ferroxcube-pot-cored coils, 2646
Arsen'eva-Gell', A. N., external photoeffect of Ge, 2754
Artman, J. O., and P. E. Tannenwald, susceptibility tensor in ferrites, 495
Artym, A. D., new method of phase modulation, 287
Asano, S., spectral distribution of phosphorescence of ZnS-type phosphors, 1431
Ascher, E. A., Hall effect and spontaneous magnetization, 1784
Ashburn, E. V., measurement of auroral radiation with G-M tube photon counter, 3740
Ashwell, G. E., and C. S. Fowler, phase change of l.f. ground waves, 3857
—— with B. G. Pressey, deviation of l.f. ground waves at coast-line, 3195
—— with others, phase of l.f. ground wave propagated across coast-line, 3194
Askar'yan, G. A., generation of mm waves by electron bunches, 3701
Aspinall, E., with others, impedance measuring set, 3149
Assmus, F., and R. Boll, measurements with Hall generator, 3481
Astbury, N. F., residual effects in Campbell bridge, 205
Astoin, N., with J. Granier, absorption spectrum of NO in far ultra-violet, 2347
Astuni, E., solution, of cubic equation, 194, of quartic equations, 506
Aswath, H. S., with N. R. Srinivasan, contact angle in soldering, 1479
Atherton, A. H., secondary-emission valve, 2919
Atlas, D., with others, detectability of clouds by 1·25-cm radar, 2749
Austin, I. G., and R. Wolfe, properties of semiconducting diamond, 2784
Averbach, B. L., with others, effect of dislocations on minority carrier lifetime, 2435
Avery, D. G., and J. B. Gunn, modulated light spot in semiconductor measurements, 1081
—— and D. P. Jenkins, measurements of diffusion length in InSb, 145
Avins, J., and T. Brady, locked-oscillator quadrature-grid f.m. detector, 1534
Awatani, J., behaviour of Rayleigh disk for high-frequency waves, 2603
Awender, H., E. Becker and K. Sann, vacuum-plating equipment for quartz crystals, 503
Axon, P. E., with E. D. Daniel, absolute measurements in magnetic recording, 318
Ayers, E. W., E. Aspinall and J. Y. Morton, impedance measuring set, 3149
Ayres, W. P., P. H. Vartanian and J. L. Melchor, frequency doubling in ferrites, 2138
—— with others, energy concentration in ferrite-loaded waveguides, 1615
d'Azambuja, M., sunspots, identification of, 101, east/west asymmetry of, 1396
Azbel', M. Ya., and E. A. Kaner, anomalous skin effect, 3022
—— with others, galvanomagnetic phenomena in metals, 3021
Azovtsev, V. K., with others, electron mirrors and observation of domains in ferromagnetic materials, 1794

B

Baba, H., H. Chitoku and K. Nitta, photoelectric phenomena with copper phthalocyanine, 2428
Bachel, J., K. L. Lenz and O. Zinke, resistance of sheets, strips etc. at 10 c/s–100 kMc/s, 1634
Bachman, C. H., M. L. Sawner and W. Alleguide, special energy distribution of ZnS-Ag and ZnCdS-Ag, 2762
Bachman, H. L., automatic plotter for waveguide impedance, 1822
Bagley, A. S., and D. Hartke, precision frequency-measuring system, 524
Bahadur, K., with E. W. Müller, field ionization at metal surface, 3329
Bailey, D. K., scattering from ionospheric irregularities, 755
—— R. Bateman and R. C. Kirby, v.h.f. transmission by scattering in lower ionosphere, 243
Bailey, R. A., resonant-cavity torque-operated wattmeter, 2495
—— with others, appearance of oscillating discharges, 633
Bailin, L. L., radiation field of slot in cylinder, 1623
Bain, W. C., Adcock direction finder, 758; design of h.f. d.f. systems, 1422; fluctuations in c.w. radio bearings, 3065
Baker, W. J., unattended broadcasting transmitters, 1573
Baker, W. P., 50-c/s null indicator for h.v. bridges, 214
Bakos, G. P., mechanical aspects of magnetic-recorder design, 2280
Balaban, P., with I. Cederbaum, drift compensation in d.c. amplifiers, 360
Balachandran, M., dielectric constant of building materials, 1741
Balas, W., J. Dempsey and E. F. Rexer, oxide-impregnated Ni-matrix cathode, 626
Balcou, Y., with others, influence of light on absorption of e.m. radiation by Se, 2431
Ballard, S. S., with K. A. McCarthy, thermal conductivity of Ge, 474
Bal'yan, R. Kh., push-pull magnetic amplifier, 3013
Banbury, P. C., with J. D. Nixon, surface lifetime in Ge in electric fields, 3099
Banerjee, D. K., P. G. Surange and S. K. Sharma, ionospheric observations at Banaras during solar eclipse, 2514
Banerji, R. B., irregularities causing fading of 150-kc/s waves, 1415
Bankina, V. F., with N.Kh. Abrikosov, thermoelectric properties of $CrSb_2$, 3773
Banks, E., with P. M. Jaffe, oxidation states of Eu in phosphors, 1064
Banner, E. H. W., electronic measuring instruments, 1818
Barabaschi, S., C. Cottini and E. Gatti, high-sensitivity pulse trigger circuit, 1336
Baral, S. S., ionospheric prediction methods, 3854
Baranovski, S. N., D. L. Kaminski and V. M. Kel'man, electron-optical properties of magnetic gaps, 1178
Barber, D., current noise in PbS, 1109
Barber, D. R., changes in sky brightness accompanying geomagnetic activity, 744
Barber, N. F., correlation treatment of fading signals, 3200
Barbier, J. C., and R. Aléonard, paramagnetism of rare-earth ferrites, 1789
—— with others, properties of yttrium ferrite, 3114
Barbier, M., deposition of charges on insulators by secondary emission, 2262, 2922
Barbier-Andrieux, M. J., preparation of Ge-Si alloys by electrolysis, 3103
Barbour, J. P., with W. P. Dyke, electron projection microscopy, 2863
—— with others, temperature-and-field emission from tungsten, 392; electron emission from clean tungsten, 1912
Barchukov, A. I., and others, electromechanical stabilizer for klystron frequency, 58
Bardeen, J., and D. Pines, electron-phonon interaction in metals, 379
Barden, S. E., with others, Glasgow 340-MeV synchrotron, 538
Bardsley, W., and B. W. Straughan, spiral etch pits in Si, 2788
—— with C. A. Hogarth, effect of illumination on noise of Si filaments, 1089
Barker, R. H., pulse transfer function and application to servo systems, 267; digital data-transmission, transducer for, 1518, servo system for, 1553
Barkhatov, A. N., sound shadow in medium with vertical gradient, 308; attenuation of ultrasonics in water, 1929
Barlow, H. E. M., and L. M. Stephenson, Hall effect and application to power measurement, 1488
—— with W. M. G. Fernando, radial cylindrical surface waves, 2282
Barnard, G. R., illumination of radar operation rooms and signal detection threshold, 1730
Barnett, G. F., and others, beam-indexing 'apple' tube, 3893
Barrett, J. F., and J. F. Coales, analysis of nonlinear control systems, 2498
Barrie, R., electronic conduction in solids, 3331
—— and J. T. Edmond, study of conduction band of InSb, 145
Barrington, A. E., cantilever cathode for c.w. magnetron, 1595; reduction of minimum striking voltage of thyratrons, 2341
Barron, T. H. K., research in semiconductors, 2778
Barry, J. N., and G. W. Secker, radio interference measuring set using transistors, 1537
Barsis, A. P., with others, fading in propagation through turbulent atmosphere, 250
Barstow, J. M., ABC's of colour television, 580
Barsukov, O. M., measurements of elliptically polarized e.m. field, 2836
Bartenstein, R., A. Bergman and L. Menstell, h.f. interference by 380-kV installations, 2212
Barthel, K., television transmission on cables, 577
Bartman, F. L., and others, upper-air density by falling-sphere method, 3723
Barton, R. S., with others, high-power demountable klystron for X band, 944
Barzilai, G., calculation of input conductance of cylindrical aerial, 981
Basard, R., reliability of Greek radio-link system, 1207
Basnett, T. N., factors affecting valve life, 936
Basov, N. G., and A. M. Prokhorov, methods of obtaining active molecules for molecular generator, 402; molecular-beam oscillator and amplifier, 3709
—— V. G. Veselago and M. E. Zhabotinski, increasing *Q* factor of cavity resonator, 348
Bass, F. G., with I. M. Tsidil'kovski, equations of transport in strong electric fields, (D)458
Bassole, P., and J. Eldin, utilization of valves on French long-distance lines, 2254
Batalle, M., equilibrium states of bistable flip-flop, 2648
Bateman, R., with others, v.h.f. transmission by scattering in lower ionosphere, 243

Bates, D. R., and B. L. Meinesz; Meinel hydroxyl system in night airglow, **3042**
Bates, L. F., ferromagnetic domains, **1780**
—— and A. Hart, magnetization curves and domain structure, **3450**
—— and D. H. Martin, domain structures in alnico, **176**; domain nucleation in Si-Fe, **2452**
—— and N. P. R. Sherry, reversible and irreversible components of magnetothermal effect, **823**
—— and A. W. Simpson, thermal effects associated with magnetization, **1130**
Battey, J. F., and R. M. Baum, carrier capture in Ni-doped Ge, **1764**
Bauch, H., 'frequency group' and loudness, **2944**
Bauer, F. L., operating parameter matrix of quadripoles, **1990**
Bauer, J., and J. Valletta, coaxial-cable carrier-current systems, **908**
Baum, R. M., with J. F. Battey, carrier capture in Ni-doped Ge, **1764**
Baur, K., phase centre of aperture radiators, **1962**
Bayard, M., Théorie des Réseaux de Kirchhoff. Régime sinusoïdal et Synthèse, **(B)1348**
—— and R. Roquet, architectural characterization of messages, **2531**
Bayer, H., with W. Schaffeld, propagation in circular waveguides near cut-off, **2619**
Bayet, M., kinetic theory of Lorentz gas, **2691**
Bazhenov, V. A., piezoelectric properties of wood and cellulose, **2770**
Bazzard, G. H., with C. W. Spencer, semi-automatic pen-recorder chart analyser, **3822**
Beam, W. R., noise figure of travelling-wave valves, **622**; interception noise in electron beams, **1594**
—— and D. J. Blattner, phase distortion in travelling-wave valves, **2573**
—— with R. C. Knechtli, electron guns for noncircular spots, **3593**
Bean, B. R., meteorological effects on scattered v.h.f. waves, **3185**
—— and F. M. Meaney, refractivity gradient and tropospheric propagation, **241**
Bean, C. P., hysteresis loops of mixtures of ferromagnetic powders, **1128**
—— with I. S. Jacobs, elongated fine particle magnets, **1461**
—— with W. H. Meiklejohn, new magnetic anisotropy, **3803**
—— with D. S. Rodbell, reversal of magnetization in tapes, **1176**
Beattie, J. R., and G. K. T. Conn, surface resistance of metals at infrared frequencies, **1076**
Beblashvili, Sh. L., reliability of operation of systems, **2217**
Becherl, K., comments on nonlinear electrodynamics, **84**
Bechmann, R., temperature coefficient of quartz resonators, **1323**, influence of overtone order on, **346**; constants of polarized $BaTiO_3$ ceramics, **3082**
—— and Y. Durana, temperature variation of quartz resonators, **1639**
Beck, A., stability of thermistors, **1977**
Beck, A. C., waveguide investigations with $n\mu s$ pulses, **1808**
Beck, A. H., and others, diffusion cathode, **1258**
Becker, F., with others, vacuum plating equipment for quartz crystals, **503**
Becker, G., with others, quartz clocks at the Physikalisch-Technische Bundesanstalt, **3468**
Becker, J. A., and R. G. Brandes, seeing molecules in field-emission microscope, **2505**
Becker, W., variations of f_0F_1 during undisturbed conditions, **755**
Becking, A. G. T., H. Greenidge and K. S. Knol, noise factor of four-terminal networks, **691**
Beckmann, B., and K. Vogt, observations of v.w. back-scatter, **896**
Bedard, F., H. Metzner and G. E. Owen, electron emission from superconductors, **3340**
Bedford, B. D., C. H. Willis and G. C. Dodson, optimum core shape for magnetic amplifiers, **340**
Bedos, R., and P. Jean, relaxation oscillations in triode valve, **1652**
Bedrosian, E., curved passive reflector, **2631**
Bedrosian, S. D., and R. McCoy, Jr, normalized filter design, **1646**
Behar, I., micrographic study, of Cu ferrite, **1119**, of Li ferrite, **3113**
Beltscher, H. R., with others, acoustic attenuation of ear protective devices, **3618**
de Belatini, P., multipotentials of multipoles, **2349**; coils with parallel windings, **3640**
Belger, E., 'spitting' effect in u.s.w. reception, **552**
—— and F. von Kautzleben, required interference-protection ratios for medium-wave transmitters, **1863**; shared channel operation with frequency offset, **1869**
—— E. A. Pavel and H. Rindfleisch, influence of delay distortion on quality of broadcasts, **266**
Bellkova, T. P., phosphorescence of ZnS-Cu, **3080**
Bell, D. A., phenomenological approach to current noise, **480**; distribution functions of semiconductor noise, **818**
Bell, W. S., and C. W. Schultz, shipboard telemetry for missiles, **3180**
Bellman, R., perturbation methods involving expansions, **505**
Belohoubek, E., wide-band junction between coaxial line and waveguide, **661**
Belova, E. N., with others, structure of $Tl_3Sb_3Se_4$, **2448**
Below, F., and H. Grabke, influence of optical system on television picture, **1233**
—— and E. Schwartz, position of colour subcarrier in 625-line adaptation of N.T.S.C. system, **1878**
Belrose, J. S., M. H. Devonport and K. Weeks, radio observations on 23rd February 1956, **2717**
Belsterling, C. A., analysis of differential magnetic amplifier, **2344**
Bemski, G., lifetime of electrons in p-type Si, **1085**
Bendell, S. L., with H. N. Kozanowski, film requirements and masking techniques for colour television, **3546**
Béné, G., with others, nuclear magnetic resonance in weak fields, **1694**
Benedek, G. B., W. Paul and H. Brooks, effect of pressure on n-type Ge, **1452**
Beneking, H., active quadripoles with intermediate-point earthing, **1338**
Benner, A. H., and R. F. Dremick, detection of pulsed signals in noise, **439**
de Bennetot, M., permanent magnets for microwave valves, **1254**; oscillation modes of M-type carcinotron, **3255**
Bennett, D. C., and B. Sawyer, single crystals produced by zone levelling, **3102**
Bennett, H. E., with others, velocity of light, **1352**
Bennett, J. M., with others, velocity of light, **1352**
Bennett, W. P., u.h.f. beam power valve, **635**
Bennett, W. R., methods of solving noise problems, **2527**
Bennington, T. W., long-distance v.h.f. interference, **550**; effects of ionospheric storms over North Atlantic circuit, **1193**; ionosphere review 1955, **1419**
Benoit, J., and E. Nanobar, permeability of conductors at high frequency, **2307**
Benoit, R., low-frequency noise of geomagnetic field, **3061**
Benoit, R. C., Jr, and M. W. Furlow, wide-aperture direction finders, **330**
Benson, F. A., and L. J. Bental, glow-discharge stabilizers, **640**; glow-discharge tubes, **1263**; wide-range voltage stabilizers, **3890**
—— and G. V. G. Lusher, effects of heater-voltage variations in stabilizers, **576**
—— and G. Mayo, glow-discharge tubes, running voltage/current characteristics of, **952**, impedance/frequency characteristics of, **1920**
—— and M. S. Seaman, saturated diodes, **(D)1596**; a.c. voltage stabilizer, **2887**
—— with J. Allison, attenuation of ferromagnetic waveguides, **2288**
Bental, L. J., with F. A. Benson, glow-discharge stabilizers, **640**; glow-discharge tubes, **1263**; wide-range voltage stabilizers, **3890**
Bentivegna, M., with others, p-n-p transistors using high-emitter-efficiency alloys, **2563**
Bentley, A. D., S. K. Ghandi and V. P. Mathis, transistor test equipment, **526**
Benton, B. M., servo amplifiers use power transistors, **3685**
Benz, F., reducing noise effects in p.c.m., **258**
Benz, W., transistor amplifiers with feedback, **703**
Beranek, L. L., broadcast studio redesign, **969**
Berendt, R. D., with others, measurement of correlation coefficients in reverberant sound fields, **1284**
Berg, H., interpretation of drift of field-strength nonuniformities as ionospheric winds, **755**
Berg, O. E., day sky brightness to 220 km, **427**
—— and others, altitude of (OI) 5577A line in night airglow, **3368**
Berger, H., with J. Jacobs, large-area photoconductive X-ray pickup tube, **2864**
Berger, W., and H. J. Butterweck, coils for uniform magnetic fields, **2695**
Bergman, A., with others, h.f. interference by 380-kV installations, **2212**
Berk, A. D., and B. A. Lengyel, magnetic fields in ferrite bodies in microwave cavities, **347**
Berkhout, H. L., television receiver for four standards, **3230**
Berkowitz, R. S., sampling band-limited functions, **1542**
Berlaga, R. Ya., M. A. Korush and L. P. Strakhov, photo-e.m.f. of Pb photocells, **3251**
Berliner, O., stereophonic sound system covers Hollywood Bowl, **317**
Bernard, M. P., infrared absorption spectrum of Rochelle salt, **2089**
Bernard, M. Y., with others, Optique électronique I. Lentilles électroniques, **(B)3507**
Bernard, W. B., servo valve modulates amplifier screen grid, **597**
Bernardini, C., stability of current-carrying wire in magnetic field, **1697**
Berry, R. E., with others, photoelectromagnetic effect in CdS, **2404**
Bershtein, I. L., fluctuation of oscillations of klystron generator, **1997**
Bertaut, F., and F. Forrat, structure of rare-earth ferrites, **1790**; perovskites composed of rare earths and transition elements, **2820**
Bertein, F., and W. Chalod, production of slow e.m. waves, **3279**
Berthet, G., improvement of paramagnetic-resonance spectrograph, **1387**
Berthold, W., reversible impairment of phosphors, **445**
—— with K. H. J. Rottgardt, sticking potential of c.r.-tube screens, **637**; properties of luminescent screens under electron bombardment, **3592**
Bess, L., noise in semiconductors, **1111**
Beste, H. E., with others, colour television-receiver design, **1881**
deBettencourt, J. T., with others, tropospheric propagation beyond horizon, **238**; ionospheric propagation at frequencies exceeding m.u.f., **245**
Beukers, J. M., switched-timed f.m. unit, **3526**
Beurle, R. L., noise in different types of oscillator, **1648**
Beverage, H. H., E. A. Laport and L. C. Sumner, system parameters using tropospheric scatter propagation, **567**, **3185**
Beynon, W. J. G., solar eclipses and ionosphere, **742**
—— and G. M. Brown, region E and S_q current system, **2049**
—— and K. Davies, vertical-incidence ionospheric absorption at 2 Mc/s, **755**
Bezuglyi, P. A., A. A. Galkin and G. Ya. Levin, resistance of superconducting tin at 7.3 × 10^{10} c/s, **1776**
Bezverkhni, Sh. A., A. L. Osterovich and S. F. Rodionov, atmospheric noise during solar eclipses, **2374**
Bhalla, M. S., with P. Hariharan, logarithmic megohmmeter, **3152**
Bhattacharyya, B. K., e.m. induction in two-layer earth, **413**
Bhide, V. G., J. N. Das and P. V. Khandekar, PbS point-contact rectifiers, **2560**
Bibbero, R. J., automation survey, **868**
Bibl, K., automatic recording of ionosphere characteristics, **2729**
—— E. Harnischmacher and K. Rawer, observations of ionospheric movements, **755**
Bickford, L. R., Jr, J. Pappis and J. L. Stull, magnetostriction and permeability of magnetite and Co-substituted magnetite, **494**
Biger, R. C., and J. J. Hirsh, masking of tones by bands of noise, **3611**
Billam, E. R., and I. C. Browne, radio echoes from meteor trails, **2038**
Billard, P., chromaticity thresholds in trichromatic system, **583**
Billig, E., defects in crystals grown from melt, **3775**
—— and P. J. Holmes, growth and etching of crystals with diamond structure, **156**
Billing, H., and W. Hopmann, micro-program control mechanism, **1629**
Billings, D. E., with H. I. Leighton, solar $H\alpha$ filaments and geomagnetic disturbances, **1399**
Bingley, F. J., with others, beam-indexing 'apple' tube, **3893**
Biondi, M. A., M. P. Garfunkel and A. O. McCoubrey, mm-wave absorption in superconducting Al, **2354**
Bird, R., with B. R. Taylor, gas-filled diode as digital storage element, **1972**
Birkhoff, G., and J. B. Diaz, nonlinear network problems, **2326**
Birkhoff, R. D., with others, electron energy losses in metallic foils, **1364**
Birkinshaw, D. C., operating experiences at Lime Grove, **284**; American colour television, **1875**
Birks, J. B., magnetic anisotropy constants of ferrites, **834**
Birman, J. L., zone refining, **820**
Birnbaum, G., and H. E. Busey, refractive-index inhomogeneities in atmosphere, **109**
—— with A. A. Maryott, microwave absorption in compressed oxygen, **734**
Bischoff, K., and others, bolometers at low temperatures, **1499**
Biswas, N. N., V. N. Chiplunkar and V. C. Rideout, high-speed electronic differential analyser, **24**
Bitter, F., with J. F. Waymouth, field-induced colour shift in ZnS, **3398**
Blackband, W. T., impedance of coaxial cables, **319**
Blackman, L. C. F., and N. P. R. Sherry, anomalous time constant of Mg_2Mn ferrites, **1468**
Blackstock, A. W., R. H. Ritchie and R. D. Birkhoff, electron energy losses in metallic foils, **1364**
Bladier, B., excitation of string by bow, **3270**
Blaine, L. R., with others, velocity of light from molecular constants of CO, **69**
Blake, L. R., and A. R. Eanes, transistor frequency meters, **3494**
Blake, L. V., with L. L. Bonham, radar echoes from birds and insects, **3742**
Blakely, C. E., with others, ring array as skip-range aerial, **326**
Blakemore, T. R., with others, coherent M. T. I. radar on 50 cm, **3387**
Blanc, D., behaviour of externally graphited G-M counters, **885**
Blanc-Lapierre, A., P. Dumontet and M. Savelli, stationary random functions, **3467**; square-law detection of background noise, **3524**
Blankenship, J., R. B. Fitzgerald and R. N. Lane, objective and subjective observations on music noise, **11**
Blassbalg, H., with E. M. Glaser, logarithmic voltage quantizer, **1008**
Blatt, F. J., effect of point imperfections on electrical properties of Cu, **790**, **1112**
Blattner, D. J., with W. R. Beam, phase distortion in travelling-wave valves, **2573**
Bleazey, J. C., J. Preston and E. G. May, miniature loudspeakers, **2277**
Blecher, F. H., transistor circuits for analogue and digital systems, **2304**
Blet, G., spectral sensitivity of Se photocells, **1898**
Blevins, G. S., W. Gordy and W. M. Fairbank, superconductivity at mm λ, **1356**
Blodgett, K. B., removal of Cu from Ge, **1444**
Bloem, J., p-n junctions in photosensitive PbS layers, **3250**
Blois, M. S., Jr, preparation of thin magnetic films, **181**
Blok, J., with K. M. van Vliet, noise in semiconductors, **3796**
Blokh, E. I., with A. A. Kharkevich, transmission capacity of communication systems, **259**
Blood, H. L., S. Levine and N. H. Roberts, anomalous polarization in $BaTiO_3$, **3400**
Bloom, S., reciever ringing, **3707**
Bloomsburgh, R. A., and others, status of 'apple' receiver circuits, **3893**
Blount, G., and others, infrared absorption of InSb, **2119**
Blum, E. J., A. Boischot and M. Guiot, multiple-aerial interferometer at Nançay, **3644**
—— with others, eclipse of Crab nebula, **2711**
Blum, P. A., and A. Lebeau, elimination of slow variations in recording geomagnetic pulsations, **1402**
Blundell, A. J., with others, Ge and Si power rectifiers, **2885**
Blunt, R. F., H. P. R. Frederikse and W. R. Hosler, properties of Mg_2Sn, **1104**
—— with H. P. R. Frederikse, photoeffects in intermetallic compounds, **769**
Bobb, L. J., and E. C. Gulick, e.s. loudspeaker, **316**
—— R. B. Goldman and R. W. Roop, design and performance of e.s. loudspeaker, **1298**
Bobber, R. J., with C. L. Darner, ultrasonic shutter, **645**
Bobenrieth, A., measurement of secondary emission coefficients, **851**
—— and O. Cahen, travelling-wave valves developed at C.N.E.T., **3575**
Boberkin, A. S., with others, polarization of Rochelle salt exposed to radioactive irradiation, **143**
Bödeker, H., with F. Kirschstein, European television transmission network, **274**
Bodenstedt, E., analogue computer for differential equation, **2973**
Bodine, J. H., with W. E. Danforth, polarization in TiO_2 crystals, **2419**
Boehm, M. J., with W. E. Henry, magnetic saturation of γ-Fe_2O_3, **2451**
Boekhorst, A., self-oscillating line timebase circuit, **282**
Boella, M., and C. Egidi, propagation time of standard time signals, **1190**
de Boer, F., and H. Emmens, sedimentation of fluorescent screens, **636**
Böer, K. W., and U. Kümmel, field breakdown of CdS crystals, **135**
—— and H. Vogel, nonstationary processes in photoconductors, build-up in CdS, **1061**
—— U. Kümmel and G. Molgedey, noise in CdS single crystals, **3792**
Boers, Y., 4-channel system for Argentine radio links, **1208**
Boesch, W., calculation of parallel-connected impedances, **991**
Bogert, B. P., 'voltane', **2943**
Boggs, J. R., distance between poles of magnet, **1684**
Bohlin, T., and A. Lagerstrom, forming of negative electrode of electrolytic capacitors, **1983**
Böhm, C., iterative process for automatic division, **25**
Bohm, D., and W. Schützer, statistical problem in physics and theory of probability, **1349**
Boischot, A., and others, eclipse of Crab nebula, **2711**
—— with others, multiple-aerial interferometer at Nançay, **3644**
Bolvin, A., A. Dieu and H. P. Koenig, diffraction of microwaves, **2699**
Bok, B. J., George R. Agassiz radio telescope, **3715**
Bok, J., conductivity of InSb at low temperature, **2803**
Bokov, V. M., with others, capacitance analyser of sound field, **964**
Bolinder, E. F., sensitivity of c.r. tubes at v.h.f., **949**; optimum transmission-line matching section, **(D)3278**
Boll, R., with F. Assmus, measurements with Hall generator, **3481**
Bolle, A. P., and J. L. Bordewijk, 'negative-frequency' concept, **683**
Bolling, G. F., W. A. Tiller and J. W. Rutter, growth twins in Ge, **3101**
Boltaks, B., diffusion of Sn and Sb in Bi_2Se and Bi_2Te, **1110**
Boltaks, B. I., and N. N. Tarnovski, electrical characteristics of $CuFeS_2$, **164**
—— P. P. Kenerov and O. A. Matveev, electrical properties of CdTe, **3789**
—— O. A. Matveev and V. P. Savinov, electrical properties of ZnTe, **3439**
Bolton, J. G., distribution of radio stars, **3712**
Bolz, G., resonance enhancement of ultrasonic quartz crystals, **1282**
Bömmel, H. E., W. P. Mason and A. W. Warner, dislocations etc. of crystal quartz, **2826**
—— W. P. Mason and A. W. Warner, Jr, experimental evidence for dislocations in quartz, **842**
Bonch-Bruevich, A. M., amplitude analysers, **3680**
Bonch-Bruevich, V. L., and E. Ya. Pumper, V/I characteristic of p-n junction, **2427**
Bond, W. L., micromanipulators, **2811**
—— and J. Andrus, photographs of edge dislocations, **2438**
Bondarenko, V. V., and others, resistance of metals at high current densities, **456**
Bondareva, L. N., and M. I. Karnovski, directional properties of sound lenses, **315**
Bonfiglioli, G., E. Cosa and R. Malvano, electric constants of thin films, **2418**; modulation of conductivity by surface charges in metals, **2421**
Bonham, L. L., and L. V. Blake, radar echoes from birds and insects, **3742**
Bonn, T. H., accuracy of c.r.o. measurements, **3490**
Bonnet, M., M. Matricon and E. Roubine, Faraday effect in plasma, **732**
Bonshtedt, B. E., solutions of fundamental equation of electron optics, **78**
Booker, H. G., level at which fading is imposed on waves in ionosphere, **1522**; scattering by isotropic irregularities, **2739**; practical aspects of auroral propagation, **3185**
van den Boomgaard, J., zone-melting processes, **819**, for compounds with negligible vapour pressure, **2810**, for compounds with measurable vapour pressure, **3445**
—— F. A. Kröger and H. J. Vink, zone melting of decomposing solids, **145**
Booth, A. D., computing machine as dictionary, **26**
—— with W. N. Locke, Machine Translation of Languages: Fourteen Essays, **(B)2867**
—— with H. B. Mohanti, electronic Fourier synthesizer, **987**
Booth, C. F., and B. N. MacLarty, new h.f. station at Rugby, **2538**
Boothroyd, A. R., with J. Almond, transistor feedback amplifiers, **1347**
Boothroyd, W. P., with others, status of 'apple' receiver circuits, **3893**
Bordewijk, J. L., interreciprocity applied to networks, **2983**; TV and f.m. projects in Netherlands, **3235**
—— with A. P. Bolle, 'negative-frequency' concept, **683**
Borel, J. P., C. Manus and R. Mercier, flicker noise of Ge diodes, **1576**
Borg, H., noise reduction in reception of radar signals, **3743**
Borisenko, A. I., with others, ionic pumps with cold electrodes, **3748**
Borneman, E. H., R. F. Schwarz and J. J. Stickler, rectification properties of metal/semiconductor contacts, **157**
Borovik, E. S., galvanomagnetic phenomena and conduction electrons in metals, **822**; anisotropy of Hall effect of metals, **3408**
Bose, J. H., multiplexing f.m. broadcast transmitters, **264**
Bösenberg, W., diffusion of Sb, As and In in Ge, **809**
Bosse, G., calculations with noise voltages, **1644**
Böttcher, F., capacitor discharge on long line, **3632**
Böttger, O., work function of metals and semiconductors, **2352**
Bouchard, J., and A. Helaine, ionospheric propagation of decametre waves, **1853**
Boudouris, G., spherical frustum cavities, **2654**
Boulx, M., obstacles in path of e.m. radiation, **1689**
—— M. Clement and C. Prémoli, rain echoes with 3-cm-λ radar with circular polarization, **763**
Bourseau, J., and H. Sandjivy, coupling impedance and cable screens, **1950**
Boutry, G. A., and F. Desvignes, photodiodes and phototransistors as infrared detectors, **935**
Bouvier, P., automatic tracking radar systems, **3389**
Bouzitat, J., with R. Roch, influence of splicing on cable impedance, **1951**
—— with J. A. Ville, signal limited in time and frequency, **1206**
Bowers, K. D., and J. Owen, paramagnetic resonance, **2139**
Bowers, R., and N. T. Melamed, luminescent centres in ZnS:Cu:Cl phosphors, **776**
Bowhill, S. A., transient response of ionosphere at l.f., **755**; fading at frequencies between 16 and 2400 kc/s, **2519**
Bowie, D. M., with others, artificial dielectrics with voids, **1437**
Bowness, C., strip transmission lines, **975**
Boxer, R., and S. Thaler, solving linear and nonlinear systems, **999**
Boyet, H., with S. Weisbaum, double-slab ferrite isolator, **1994**; broadband nonreciprocal phase shifts in rectangular guide, **2959**
Boyle, W. S., and F. E. Haworth, glow-to-arc transition, **2356**
Bozorth, R. M., and others, frequency dependence of magnetocrystalline anisotropy, **835**
—— E. F. Tilden and A. J. Williams, anisotropy and magnetostriction of ferrites, **831**
Braae, R., tensor analysis and linear network theory, **(D)682**
Bracewell, R. N., chord construction for correcting aerial smoothing, **98**; correcting for running means by successive substitutions, **706**
Brackmann, J., with others, ferrites with perminvar-type hysteresis loops, **489**
Bradley, D. E., J. S. Halliday and W. Hirst, stereoscopic reflection electron microscopy, **3170**
Bradley, E. M., with D. H. Pringle, microwave control valves employing negative glow discharge, **1599**
Brady, T., with J. Avins, locked-oscillator quadrature-grid f.m. detector, **1534**
Bragg, J. K., with others, first Townsend coefficient of molecular gases, **395**
Braginski, V. B., radiation during motion of charges near inhomogeneity, **3708**
Brailsford, F., ferromagnetism in relation to engineering materials, **2456**
Bramley, E. N., tilts in ionosphere during solar eclipse, **2060**; directional observations on h.f. transmissions, **2515**
Branch, G. M., and T. G. Mihran, plasma-frequency reduction factors in beams, **3573**
Brandes, R. G., with J. A. Becker, seeing molecules in field-emission microscope, **2505**
Brandt, N. B., with others, galvanomagnetic properties of Bi, **1472**
Branscomb, L. M., and S. J. Smith, negative oxygen ions in upper atmosphere, **3053**
—— with S. J. Smith, negative ion-photodetachment cross-section, **396**

Brantley, J. Q., Jr, radar speed meters, **866**
Brasier, J., techniques for reliable valves, **3572**
Brattain, W. H., with T. M. Buck, surface recombination velocity of Ge, **1766**
—— with C. G. B. Garrett, theory of semiconductor surfaces, **146**; surface breakdown of transistors, **2561**
—— with G. L. Pearson, history of semiconductor research, **797**
Braude, B. V., error in method of integral equations in theory of aerials, **2621**
Braun, G., method of stationary phase, **2466**
—— with W. Glaser, wave-mechanics theory of electron-optical image formation, **707**
Braun, K., response times of gas-filled valves, **953**
Braunbeck, J., and J. Zakovsky, dependence of barrier-layer photo-effect on X radiation, **1245**
Braunstein, R., radiative transistors in semiconductors, **798**
Bray, R., minority-carrier extraction in Ge, **1443**
Bray, W. J., and others, v.h.f. propagation by ionospheric scattering, **1660**
Brazma, N. A., variation and compensation theorems for circuits, **1321**
Breckenridge, F., with others, temperature coefficient of speed of sound in water, **2934**
Bredov, M. M., obtaining *p-n* junction by pulse heating, **3434**
Brenet, J., basic problems of Leclanché cells using MnO_2, **2225**
—— A. Grund and A. M. Moussard, MnO_2 as depolarizer, **1219**
—— P. Malessan and A. Grund, depolarization of cells containing MnO_2, **1872**
Brenig, W., do sound waves possess momentum? **1272**
Brenner, R., coercive force, associated with 'Schlauchziehen', **485**, theory of, **1124**
Breskend, S. D., with R. W. Tucker, leakage resistance of capacitors, **2321**
Brewer, G. R., effect of magnetic field strength on space-charge-wave propagation, **3254**
Bricout, P. A., electron density and ray tracing in ionosphere layers, **755**
Bridgers, H. E., formation of *p-n* junctions by variation of crystal growth parameters, **3765**
—— and E. D. Kolb, rate-grown Ge crystals for h.f. transistors, **467**
Bridges, T. J., P. O. Hawkins and D. Walsh, keep-alive instabilities in t.r. switch, **2251**
—— with others, electrode deterioration in t.r. switches, **2252**
Brière, M., and J. Weill, vibrating capacitor electrometer, **855**
Briggs, B. H., observations of short bursts from distant 50-Mc/s transmitter, **2516**
—— and R. S. Page, empirical study of random functions in interpretation of ionospheric movements, **755**
—— and M. Spencer, variability of time shifts in measurements of ionospheric movements, **755**
Bright, A. W., and J. S. Thorp, measurements on hollow cathode, **1260**
—— with others, electrode deterioration in t.r. switches, **2252**
Brii, A., and H. A. Klasens, phosphors for tricolor television tubes, **783**
Brini, D., and others, fast sweep circuit, **698**
Brisbane, A. D., with others, diffusion cathode, **1258**
Brittain, F. H., and D. M. Leakey, 2-channel stereophonic sound systems, **1946**, **2607**
Broad, D. A. G., with A. R. Lang, electron optics of X-ray tubes, **3847**
Broad, E. R., and E. J. P. May, 10-kW low-pass filter, **47**
Brobeck, W. M., and W. C. Struven, bevatron frequency measurement system, **2483**
Brocklesby, P., and P. Robinson, long distance v.h.f. radio link, **3879**
Broder, J. D., with others, electroluminescence of GaP, **1433**
Brodie, I., d.c. and pulsed emission from L cathodes, **1915**
—— and R. O. Jenkins, impregnated cathodes containing SrO or CaO, **2918**
Broersma, C. B., international conference on lighthouses and other navigation aids, **123**
Bronnikova, E. G., parasitic oscillations of piezoelectric plates, **2770**
Bronshtein, I. M., and I. A. Smorodina, secondary emission, from Be, **1679**, from Ag, **1680**
Bronzi, G., a f.c. in frequency-shift radiotelegraphy, **253**, **(D)2209**
Brooker, R. A., coding for Manchester computer, **333**
Brooks, H., with others, effect of pressure on *n*-type Ge, **1452**
Brophy, J. J., properties of semiconducting diamond, **463**; electronic band structure of diamonds, **3774**
—— and N. Rostoker, Hall-effect noise, **1101**
Broser, I., and R. Broser-Warminsky, luminescence and conductivity of semiconductors, **821**
Broser-Warminsky, R., with I. Broser, luminescence and conductivity of semiconductors, **821**
Brosio, E., measurements on resonant acoustic structures, **2606**
Broussaud, G., diffraction by array of perforated plates, **1628**
Brouwer, G., electrical analogue of domain-boundary motion, **1127**
Browder, L. B., wide-amplitude string galvanometer, **3831**
Brown, A. R. G., and others, conductivities of carbon, **2422**
Brown, G. L., geophysical prospecting for water by means of e.m. interference, **(D)3157**
Brown, G. M., with W. J. G. Beynon, region **E** and S_q current system, **2049**
Brown, H. E., with others, ionospheric recorders and sporadic E, **2730**
Brown, J., and P. J. B. Clarricoats, waveguide components with non-reciprocal properties, **3666**
—— with P. H. Sollom, cm-λ parallel-plate spectrometer, **2478**
—— with R. E. Collin, equivalent circuit of asymmetrical waveguide junction, **2290**; λ/4 matching layers for dielectric surfaces, **2293**
Brown, K. A., lunar variations of F_2 layer at Ibadan, **3731**
Brown, R. G., with G. J. Thaler, Servomechanism Analysis, **(B)2544**
Brown, R. H., and R. Q. Twiss, correlation between photons in coherent beams of light, **1666**
—— H. P. Palmer and A. R. Thompson, polarization measurements on radio sources, **3714**
Brown, W. L., surface potential from semiconductor field-effect measurements, **1078**
Browne, I. C., and others, radio echoes from meteor trails, **2037**
—— with E. R. Billam, radio echoes from meteor trails, **2038**
Browne, P. F., infrared luminescence of ZnS and CdS phosphors, **3753**
Brownless, S. F., standardized transmitting aerials, **1304**
Bruce, G. D., and J. C. Logue, experimental transistorized calculator, **2305**
Brueckmann, H., helicopter measures antenna patterns, **328**
Brueckner, K. A., with K. M. Watson, study of ionized gases, **2692**
Brühl, G., dm-λ radio-link network providing program channels, **3534**
Bruin, F., and M. Bruin, measurements of paramagnetic resonance absorption line, **2703**
—— and F. M. Schimmel, theory of autodyne detector, **1664**
Bruin, M., with F. Bruin, measurements of paramagnetic resonance absorption line, **2703**
Bruk, I. S., and N. N. Lenov, electronic differential analyser, **3285**
Brüninghaus, F., e.r.o. for very short h.v. phenomena, **2856**
Bryan, J. S., with others, beam-indexing colour-television display system, **3893**
Bube, R. H., photoconductivity, phenomena in CdS and CdSe, **441**, of Zn and Cd sulphides, selenides and tellurides, **770**, in CdS crystals, **2755**
—— with S. M. Thomsen, high-sensitivity photoconductor layers, **611**
Buchanan, G. S., and F. Gutmann, linearity of electrolytic impedances, **3812**
Buck, D. A., cryotron superconductive computer element, **1980**
Buck, T. M., and W. H. Brattain, surface recombination velocity of Ge, **1766**
Buckingham, A. D., birefringence due to intense beam of light, **2680**
—— and J. A. Pople, dielectric constant of imperfect nonpolar gas, **378**
Buckingham, M. J., very-high-frequency absorption in superconductors, **2355**
Buckingham, W. D., flat-bed facsimile transmitter, **3545**
Buckley, G. V., parallel-T *RC* network, **2659**
—— and others, reproducing equipment for fine-groove records, **2279**
Budden, K. G., method of determining $N(z)$ curves from (h', f) curves, **755**; nonexistence of 'fourth reflection condition' in ionosphere, **755**; mathematics of wave propagation through ionosphere, **755**
Buelteman, H. O., Jr, with R. Hoertz, perpendicularly superposed magnetic fields, **339**
Buhler, W., Ge diodes for computers, **1629**
de Buhr, J., parameters of loss-free quadripoles, **349**; geometrical representation, of parallel and series reactance, **1643**; of combined quadripoles, **1988**, of double transformer, **1989**, of loss-free quadripoles, **2331**
Bukke, E. E., dielectric constant of phosphors under infrared irradiation, **133**
Bullard, E. C., stability of homopolar dynamo, **1401**
Bullington, K., beyond-horizon radio transmission, **234**
—— W. J. Inkster and A. L. Durkee, propagation test at 505 Mc/s and 4090 Mc/s on beyond-horizon paths, **234**
Bullis, W. M., and W. E. Krag, Hall effect in oriented crystals of *n*-type Ge, **2112**
Bullough, K., with others, radio echoes from meteor trails, **2037**
Buneman, O., magnetron theory, **939**
Bünemann, D., delay equalization of television system, **2240**
Bunkin, F. V., and N. V. Karlov, sensitivity of radiometers, **221**
Burbidge, G. R., halo of radio emission and cosmic rays, **2035**
Bürck, P., with L. Heck, sound transformations in broadcasting studio technique, **2948**
Burkard, O., variations of F_1 ionization, **2054**
Burks, A. W., and I. M. Copi, logical design of computer, **2965**
Burger, H., with M. Kornetzki, ferrite cores with rectangular loops in nonuniform fields, **490**
Burgess, R. E., noise in illuminated Ge diodes, **290**; thermal effects in point-contact rectifiers, **292**; admittance of temperature-dependent circuit elements, **676**; thermistors and Ge rectifiers, oscillations in, **696**, turnover phenomenon in, **994**; carrier-concentration disturbances in semiconductors, **792**; fluctuations of numbers of electrons and holes in semiconductor, **793**; reduction of noise in photoconductive cells, **1248**
Burn, K. C., with R. Feinberg, new h.v. low-current triodes, **2261**
Burnett, J. H., thyratron grid-control circuit, **2221**
Burov, A. K., ultrasonic oscillations for treatment of tumours, **2179**
Burr, R. P., and J. R. White, computer gives tristimulus values, **70**
Burris, L., Jr, C. H. Steckman and I. G. Dillon, mathematics of zone melting, **1141**
Burrus, C. A., and W. Gordy, mm and sub-mm λ spectroscopy, **2156**
Burstein, E., with M. Lax, broadening of impurity levels in Si, **1086**
—— with others, optical properties of deformed Ge, **154**
Burt, E. G. C., and O. H. Lange, function generators for analogue computing, **2301**
Burton, M., and T. J. Neubert, effect of neutron bombardment on graphite, **3424**
Busby, J., and E. G. Richardson, propagation of ultrasonics in suspensions, **2274**
Busch, G., degeneracy of intrinsic semiconductor, simple method of visualizing, **145**, graphical treatment of, **460**
—— and K. A. Muller, Mn impurity centres in grey tin, **478**
Busch, K. J., A. D. Hasley and C. Neitzert, magnetic pulse modulators, **36**
Buss, R. R., with G. Hetland, Jr, low-ripple regulated power supply, **572**
Bussey, H. E., with G. Birnbaum, refractive-index inhomogeneities in atmosphere, **109**
Butcher, P. N., loss periodic waveguides, **2285**
Butler, T. W., Jr, H. Diamond and L. W. Carr, nonlinear d.c.-tuned capacitors, **3663**
Butters, R. G., and H. P. Myers, structure and magnetic properties of Mn_4AlC, **168**
Butterweck, H. J., with W. Berger, coils for uniform magnetic fields, **2695**
Butterworth, J., 'light-disk' method of measuring bulk lifetime in semiconductors, **795**
Button, K. J., with B. Lax, new ferrite mode configurations, **325**, in rectangular waveguide, **324**
Butuzov, V. P., and N. Yu. Ikornikova, liquid inclusions in artificial quartz, **841**
Bycroft, G. N., vibrations of circular plate, **1928**
Byham, G. L., with others, sensitivity to changes in interruption rate of white noise, **1943**
Byram, E. T., T. A. Chubb and H. Friedman, solar X-ray spectrum and density of upper atmosphere, **3375**
Bystrov, G. N., detectability of object and number of illuminating pulses, **3067**

C

Cabannes, F., induced electric discharge in rare gases, **1675**
Cabessa, R., high-quality radio links over sea paths in Greece, **1207**
Cade, R., and D. O. Vickers, e.s. centre of conductor, **2350**
Cagnac, B., with others, nuclear magnetic resonance in weak fields, **1694**
Cahen, F., and H. Prigent, telecontrol system on 175 c/s in France, **1187**
Cahen, O., with A. Bobenrieth, travelling-wave valves developed at C.N.E.T., **3575**
Calcoya, J. I., generation of multiple modes between parallel plates, **3495**
Caillon, P., and E. Groubert, effects of pressure on dielectric constants of liquids, **2769**
Caldirola, P., new model of classical electron, **2681**
Caler, H. R., with E. N. Singer, broadband aerial, **1305**
Callahan, W. R., flexural vibrations of plates, **2272**
Callaway, J., electronic energy bands in Fe, **174**
—— with others, infrared absorption of InSb, **2119**
Callendar, M. V., effect on pulse response of delay variation, **2984**
Calverley, A., with others, zone melting by electron bombardment, **2147**
Cambi, E., free oscillations in variable-parameter system, **2651**; inverse Laplace transforms as Neumann series, **3819**
Camp, P. R., etching rate of single-crystal Ge, **1445**
Campbell, D. S., observations on etched crystals of $BaTiO_3$, **1074**
—— and D. J. Stirland, examination of etched crystals of $BaTiO_3$, **2414**
Campbell, I. D., transmission of plane wave between parallel plates, **1601**
Campbell, I. E., with others, preparation of high-purity thorium, **2144**
Campbell, R., orthogonal polynomials with orthogonal derivatives, **2150**
Canac, F., visual display of sound waves, **3621**
Candy, C. J. N., thermistor as element in very-low-frequency systems, **2315**; vector method for a.m. signals, **2529**
Caplan, P. J., with H. H. Theissing, atmospheric attenuation of solar mm-λ radiation, **3041**
Cardus, J. O., ionospheric sounding equipment, **3735**
Carlin, H. J., u.h.f. multiplexer uses selective couplers, **353**
Carlson, C. L., with others, *p-n-p* transistors using high-emitter-efficiency alloys, **2563**
Carlson, R. O., properties of near-degenerate B-doped Si, **1442**
Carman, E. H., iron powder for permanent magnets, **1478**; properties of iron-powder magnets, **1781**
Carniol, B., reading by damped-oscillation method, **3210**
Caro, D. E., L. H. Martin and J. L. Rouse, variable-energy cyclotron, **229**
Carpenter, C. P., C. W. Helstrom and A. E. Anderson, post-deflection-focus colour kinescope, **3894**
Carpenter, J. C., Jr, bandwidth requirements of f.m./f.m. telemetering, **3851**
Carr, L. W., with others, nonlinear d.c.-tuned capacitors, **3663**
Carrick, G. A., Ge power rectifiers, **574**
—— with others, Ge and Si power rectifiers, **2885**
Carroll, J. M., electronics in process industries, **2500**; analogue computers, **2966**; computer input/output devices, **3653**
Carroll, T. J., Marconi's last paper 'On the Propagation of Micro-waves over Considerable Distances', **3517**
—— and R. M. Ring, propagation in normally stratified troposphere, **240**
Carswell, I., current distribution on wing-cap and tail-cap aerials, **2625**
Carter, A. W. L., angular size of r.f. source Hydra-A, **1703**
Carteron, J., E. Fromy and B. Prokocimer, recording r.f. interference, **3488**
de Carvalho, A. A. Pires. See Pires de Carvalho, A. A.
Casabona, A. M., aerial for AN/URN-3 Tacan beacon, **3386**
Caspari, M. E., with R. R. Rau, Faraday effect in Ge, **1098**
Cassedy, E. S., with J. M. Minkowski, cross-section of collinear arrays, **2627**
du Castel, F., influence of atmospheric turbulence on u.s.w. radio links, **2203**
Cawsey, G. F., with J. L. Farrands, microwave observations of detonation, **1833**
Cayless, M. A., analysis of gases at low pressure, **2078**
Cazenave, R., convergence and summation of Fourier Series, **195**; magnetic field, due to circular current, **1033**, of thin cylindrical coil, **3699**
Cederbaum, I., network determinants, **2325**
—— and P. Balaban, drift compensation in d.c. amplifiers, **360**
Cetlin, B. B., with others, frequency dependence of magnetocrystalline anisotropy, **835**
Chahid, W., shunt resistance, of cavities, **1324**, of linear accelerators, **1813**
—— with F. Bertein, production of slow e.m. waves, **3279**
Chakravarti, S. P., research in communications in India, **2215**
Chamberlain, J. W., resonance scattering by atmospheric sodium, **3728**
—— with others, photometric unit for airglow and aurora, **3043**
Chambers, L. G., propagation in ferrite-filled waveguide, **1956**
Chambers, R. G., penetration depth in impure superconducting tin, **3333**; cyclotron resonance under anomalous skin-effect conditions, **3334**
Chambron, W., diffraction of cm-λ waves by conducting spheres, **1381**
Champeix, R., H. Dormont and E. Morilleau, photomultiplier tube for scintillation counting, **299**
Champion, F. C., physical consequences of defects in diamonds, **2786**
Chandrashekha Aiya, S. V. See Aiya, S.V.C.
Chaney, L. W., with others, upper-air density by falling-sphere method, **3723**
Chang, K. K. N., periodic focusing for travelling-wave valves, **621**
Chaplin, G. B. B., point-contact transistor scaling circuit, **3005**
—— and A. K. Owens, junction-transistor scaling circuit, **3006**
—— R. E. Hayes and A. R. Owens, transistor digital fast multiplier, **1631**
Chapman, F. W., and R. C. V. Macario, propagation of a.f. radio waves, **3192**
Chapman, J. H., K. Davies and C. A. Littlewood, radio observations of ionosphere at oblique incidence, **1850**
Chapman, S., rate of change of composition in atmosphere, **745**
—— and K. C. Westfold, solar and lunar atmospheric tides, **2068**
Chappell, D. W. G., and C. L. Henderson, horizontal velocity of ionospheric movements, **2387**
Charles, D., and R. J. Warnecke, hydrogen thyratron, **2926**
Charlton, C. B., self-healing in metallized-paper capacitors, **3294**
Charru, A., with P. Loudette, polarimetric study of ferrite, **3636**
Chase, C. E., direct-reading noise-figure indicator, **527**
Chase, R. F., with others, Stanford-Seattle whistler observations, **2392**
Chasmar, R. P., and R. Stratton, effective electron mass in InAs and InSb, **3793**
Chatterjee, B., variation of F-region height, **420**; accurate phase measurement of four-terminal network, **3479**
Chatterjee, J. S., crust as seat of earth's magnetism, **2719**
Chatterjee, R., and S. K. Chatterjee, investigations on dielectric aerials, **3637**
Chatterjee, S. D., with H. Rakshit, measurement of ionospheric heights, **754**
Chatterjee, S. K., and P. Madhavan, propagation of microwaves on single wire, **16**
—— and B. V. Rao, artificial dielectrics at microwave frequencies, **1385**
—— with R. Chatterjee, investigations on dielectric aerials, **3637**
Cheng, C. C., design procedures for tuned transistor amplifiers, **368**; frequency stability of transistor oscillators, **1334**
Cheng, D. K., effect of phase errors on radiation pattern, **1625**; microwave aerial testing at reduced range, **3643**
—— and P. Grusauskas, aperture phase errors in microwave reflectors, **332**
Cherepnev, A. A., state of Cu activator in ZnS phosphors, **134**
Chernish, G. C., life-test results on Se rectifiers, **3540**
Chernosky, E. J., variations in geomagnetic activity, **2720**
Chernov, A. A., with others, resistance of metals at high current densities, **456**
Chernov, Yu. A., nonlinear distortion of reflex circuits, **3314**
Chernyakova, M. A., and A. P. Chudnovski, thermal characteristics of semiconductors, **1755**
Chevallier, A., and B. Prokocimer, isolating direct-current amplifiers, **3316**
Chick, D. R., and D. P. R. Petrie, e.s. particle accelerator, **1838**
Chih Chi Hsu. See Hsu, Chih Chi.
Chikazumi, S., and T. Oomura, magnetic anisotropy induced by annealing, **1459**
Chiplunkar, V. N., with others, electronic differential analyser, high-speed, **24**, timing device and nonlinear units for, **2637**
Chiron, B., and P. M. Prache, complex susceptibility of Mg ferrites, **2137**
Chisholm, J. H., tropospheric propagation research and communications beyond horizon, **3185**
—— and others, tropospheric propagation beyond horizon, **238**
—— with others, ionospheric propagation at frequencies exceeding m.u.f., **245**
Chitoku, H., with others, photoelectric phenomena with copper phthalocyanine, **2428**
Chlavin, A. See Clavin, A.
Chocholle, R., calculation procedure for harmonic analysis, **3463**
Chodorow, M., and E. J. Nalos, design of high-power travelling-wave valves, **2570**
Choudhury, A. K., isograph root finder, **1315**
Christ, K., with others, microwave television radio relay, **2546**
Christensen, H. S., air navigational facilities, **433**
Christian, S. M., with others, cyclotron resonance in Ge-Si alloys, **1456**
Christiansen, W. N., and J. A. Warburton, distribution of radio brightness over sun, **1706**
Chruney, M., with others, digital memory in barrier-grid storage tubes, **1262**
Chubb, T. A., with H. Friedman, solar X-ray emission and height of D layer during fade-out, **755**
—— with others, solar X-ray spectrum and density of upper atmosphere, **3375**
Chudnovski, A. F., use of semiconductors in investigating natural phenomena, **3501**
—— with M. A. Chernyakova, thermal characteristics of semiconductors, **1755**
Chynoweth, A. G., $BaTiO_3$, pyroelectric effect in, **1745**, surface space-charge layers in, **3406**; spontaneous polarization of GaSb, **3403**
—— and K. G. McKay, photon emission from avalanche breakdown in Si, **3096**
Clabaugh, W. S., E. M. Swiggard and R. Gilchrist, $BaTiO(C_2O_4)_2 \cdot 4H_2O$ for $BaTiO_3$, **3399**
Clapp, R. G., and others, colour-television-receiver design, **1881**; beam-indexing colour-television display system, **3893**
Clark, E. G., with others, colour-television-receiver design, **1881**
Clarke, C., with F. Horner, waveforms of atmospherics and location of thunderstorms, **122**
Clarke, E. N., water-vapour induced current on Ge junctions, **807**
—— with R. L. Hopkins, thermal acceptors in Ge, **1765**
Clarke, G. M., with C. P. Allen, wavelength measurements on tape helices, **2284**
Clarke, W. W. H., cathode standing waves and valve stability, **1913**
—— and L. Jacob, anomalous emission in low-energy electron beams, **1177**
—— W. M. Searle and F. T. Vail, ferrite modulator using feedback, **3015**
Clarricoats, P. J. B., with J. Brown, waveguide components with non-reciprocal properties, **3666**
Clavier, P. A., with others, transverse-field travelling-wave valves, **1252**
Clavin, A., nonlinearity of propagation in ferrite media, **1384**; aerial feed with equal E- and H-plane patterns, **2626**
Cleland, J. W., and J. H. Crawford, Jr, neutron bombardment of GaSb, **1770**
—— J. H. Crawford, Jr, and D. K. Holmes, effects of gamma radiation on Ge, **3438**
—— J. H. Crawford, Jr, and J. C. Pigg, neutron bombardment of *p*-type Ge, **468**
—— with others, magnetic susceptibility of Ge, **1451**
Clemence, G. M., definition of second of time, **1153**; standards of time and frequency, **3823**
Clément, M., with others, rain echoes with 3-cm-λ radar with circular polarization, **763**
Clemmow, P. C., and R. F. Mullaly, dependence of refractive index

on direction of wave normal, 755
—— M. A. Johnson and K. Weekes, motion of cylindrical irregularity in ionized medium, 755
Clogston, A. M., and others, line width in ferromagnetic resonance, 2033
des Cloizeaux, J., with P. Aigrain, effective mass of electrons in InSb, 815
Clot, J., with J. Lagasse, c.m. scanning systems for c.r.o., 216
Clothier, W. K., RC networks with single-component frequency control, 2661; switch-dial potential divider, 3487
—— and F. G. Hawes, differential amplifier for low-frequency bridges, 3150
Coale, F. S., with S. B. Cohn, directional channel-separation filters, 3297
Coales, J. F., and A. R. M. Nutton, on-off servomechanism, 3222
—— with J. F. Barrett, analysis of nonlinear control systems, 2498
Coates, H. N., electronic machine for particle analysis, 3176
Coche, A., subtracting counter using dekatrons, 1337
Cocking, W. T., television sync pulse spectrum, 579; transistor operating conditions, 1344; new reporter circuit, 1993; television picture quality, 2898; Janet communication system, 3533
Cockroft, H. S., and J. R. Pickin, klystrons for high-power c.w. operation, 1588
Codelupi, R., spectral density of cross-modulation noise, 2883
Coe, R. F., with others, injection phenomena in proton synchrotron, 2860
Coen, E., with others, electric constants of thin films, 2418; modulation of conductivity by surface charges in metals, 2421
Coffeen, W. W., antimonates as additives to $BaTiO_3$ bodies, 3815
Coffey, W. N., measuring junction transistors, 1483
Cohen, H., and G. Handelman, vibrations of plate with added mass, 2930
Cohen, M., with others, infrared absorption of InSb, 2119
Cohen, M. H., and F. Keller, dipolar ferromagnetism at 0°K, 397
Cohn, S. B., and F. S. Coale, directional channel-separation filters, 3297
Colani, C., microwave discriminator, 2007
Colas, M., stabilizing, 2644
Coleman, D. R., D. Alfonsin and B. A. Horlock, underwater television camera, 1226
Coleman, P. D., and M. D. Sirkis, harmodetron for producing mm-λ and submm-λ waves, 1000
Coles, B. R., Hall effect measurements on alloys, 2457
Colin, C., study of air layer between diaphragm and electrode, 1270
Colin, R. I., and S. H. Dodington, principles of Tacan, 3386
Colin, Y., with others, lattice defects and absorption of e.m. radiation by Cu_2O, 2446
Collette, G., and R. Labrousse, Lm. radio altimeter, 3069
Collin, R. E., optimum transmission-line matching section, 1953, (D)3278; reflection at slotted dielectric interface, 3652
—— and J. Brown, equivalent circuit of asymmetrical waveguide junction, 2290; λ/4 matching layers for dielectric surfaces, 2293
Collins, H. W., high-frequency operation of magnetic amplifiers, 2674
Collins, R. J., with others, infrared absorption in n-type Ge, 2110
Collongues, R., properties of lithium ferrite, 1118
Colten, R. B., noncontacting gauges for nonferrous metals, 1835
Combe, R., and T. Frelot, production of mm waves by undulator, 1034
Combrisson, J., A. Honig and C. H. Townes, microwave application of electron spin resonance, 3032
—— with A. Honig, paramagnetic resonance in As-doped Si, 3425
Cones, H. N., with J. H. Park, breakdown of air in nonuniform field, 3024
Confalone, J. L., and W. R. Rambo, radar a.f.c. system uses mechanical tuning, 2075
Conley, P., continuous-tone underwater reverberation, 644
Conn, G. K. T., with J. R. Beattie, surface resistance of metals at infrared frequencies, 1076
Connor, P. R., ultra-high-speed oscillograph, 1824
Connor, W. S., with others, velocity of light from molecular constants of CO, 69
Conrad, E. E., and others, measurement of complex permeability and permittivity, 2845
Conte, R., balance for measurement of magnetization, 3144
Conwell, E. M., Hall effect and density of states in Ge, 470
Cook, A. E., with G. S. Hawkins, recombination as source of light from meteor trains, 3362
Cook, F. W., synthetic radar trainer, 3745
Cook, J. S., and R. J. Meakins, dielectric absorption in pinacol hydrate, 1475
—— R. Kompfner and C. F. Quate, coupled helices, 1612
Cook, R. K., and J. H. Wasilik, nonlinearity and dielectric loss of quartz, 3811
—— and others, measurement of correlation coefficients in reverberant sound fields, 1284
—— with R. V. Waterhouse, recording sound transmission loss of walls, 655
Cook, W. R., $BaTiO_3$ ceramics, 2413
Cooke, J. C., Tranter's dual integral equations problem, 3465
Coomes, E. A., with G. A. Haas, Schottky effect for SiO films on Mo, 1261
Cooper, F. S., with others, acoustic lori and transitional cues for consonants, 9
Copi, I. M., with A. W. Burks, logical design of computer, 2965
Coppola, P. P., and R. C. Hughes, pressed dispenser cathode, 1916
Coquillion, J., polyethylenetrichlene impregnated paper capacitors, 2980
Corey, V. B., analogue computer, 988
Corfield, D. N., crystal-controlled f.m. receiver, 2880
Corliss, L. M., with J. M. Hastings, antiferromagnetic transition in Zn ferrite, 3800
Corsepius, M., and K. Vogt, observations with TOM equipment at Frankfurt, 2533
Costa de Beauregard, O., diffraction by plane aperture, 1669
Coste, J., and J. L. Dehesa, rotational electron beams, 1902; plasma oscillations in magnetron, 1903
Cottingham, J. G., high-voltage attenuator, 694
Cottini, C., with others, high-sensitivity pulse trigger circuit, 1336
Coughanour, L. W., and others, dielectric properties in system MgO-CaO-SnO₂-TiO₂, 191
—— with R. S. Roth, phase equilibrium relations in systems titanium-nickel and zirconia-nickel, 844
Court, G. W. G., determination of reflection coefficient of sea for radar-coverage calculation, 438; microwave interferometer, 533; d.c.-coupled circuit using voltage-stabilizing valves, 692; ionospheric wind determination, 1418; microwave vehicle-speed indicator, 1732
—— and H. S. Gilfillan, determination of ionospheric winds, 2388
—— and C. I. C. Scoilay, saturable-reactor frequency divider, 359
Couture, L., with others, optical spectrum of piezoelectric crystals, 1063
Cowan, E. W., travelling-glow-discharge counter tube, 1265
Cox, D. R., analysis of non-Markovian stochastic processes, 196
Cox, R. J., and J. Walker, control of nuclear reactors, 3638
Cox, W. F., with A. Newell, intensification of X-ray image, 2510
Cragg, B. G., electronic magnetometer, 852
Craggs, J. D., and C. A. McDowell, ionization by electron impact, 2019
Crain, C. M., airborne microwave refractometer measurements, 108
Cranberg, L., with others, measurement of μ-gas time intervals, 2835
Crandell, P. A., turnstile radiator for rain cancellation, 1729
Crary, J. H., R. A. Helliwell and R. F. Chase, Stanford-Seattle whistler observations, 2392
—— with others, the 'new' whistler, 2393
Crasemann, B., D. E. Rehfuss and H. T. Easterday, disintegration of Ge^{69}, 3784
Craven, G., disk-seal triode amplifiers, 3007
—— and L. Lewin, microwave filters with λ/4 couplings, 1645
Crawford, A. B., and D. C. Hogg, atmospheric attenuation at mm λ, 3862
Crawford, A. E., Ultrasonic Engineering, (B)890
Crawford, J. H., Jr, H. C. Schweinler and D. K. Stevens, magnetic indication of electronic structure in Ge, 472; hydrogen in Ge and Si, 3776
—— with J. W. Cleland, neutron bombardment of GaSb, 1770
—— with D. K. Stevens, magnetic susceptibility of InSb, 163
—— with others, neutron bombardment of p-type Ge, 468; magnetic susceptibility of Ge, 1451; effects of gamma radiation on Ge, 3435
Creamer, E. M., with others, beam-indexing colour-television display system, 3893
Creamer, R. H., measurement of resistivity of Si, 3138
Čremošnik, G., transients in simple resonator circuit, 2329
Creveling, C. J., reliability of electronic equipment, 2267
Crewe, A. V., with others, extraction of beam from Liverpool synchrocyclotron, 873
Crombie, D. D., measurement of arrival angle of 'whistlers', 430; low-frequency high-pass RC filters, 2663
—— with others, frequency variations in New Zealand of transmissions from GBR, 1482
Crompton, R. W., J. Dutton and S. C. Haydon, pre-breakdown ionization currents in hydrogen, 1023
Croney, J., clutter on radar displays, 2076
Cross, L. E., ferroelectricity in pseudo-cubic dielectrics, 1744
Crowe, R. W., electric breakdown of liquid hydrocarbons, 2022
—— J. K. Bragg and J. C. Devins, first Townsend coefficient of molecular gases, 395
Crowell, C. R., theoretical basis for measuring saturation emission of cathodes, 1259; space-charge-limited characteristics of diodes, 1917
Cullen, A. L., and J. C. Parr, perturbation method for measuring microwave fields, 519
Cullwick, E. G., e.m. momentum in current circuit, 2363
Cummack, C. H., with G. A. M. King, electron distribution in ionosphere, 2722
Cumming, H. W., xenon arc discharge lamps, 2238
Cumming, W. A., endfire array for v.h.f. and u.h.f., 1308
Cuneo, J. V., with A. I. Talkin, cascaded distributed amplifiers, 361
Curie, D., with M. Curie, problems in crystal luminescence, 132
Curie, M., and D. Curie, problems in crystal luminescence, 132
Currie, B. W., auroral heights over Canada, 1723
—— and J. T. Weaver, vertical extent of auroral arcs and bands, 1420
Currie, M. R., and J. R. Whinnery, cascade backward-wave amplifier, 624
Cusano, D. A., with F. J. Studer, transparent phosphor coatings, 444
Cutler, C. C., spurious modulation of electron beams, 1256
Cutler, M., forward characteristics of Ge point-contact rectifiers, 291
Cutteridge, O. P. D., transient response calculation, 689
Cutting, A. B., with others, diffusion cathode, 1258
Czajkowski, Z., electronic methods of analogue multiplication, 2967
Czyżewski, O., J. de Mezer and A. Strzałkowski, solar radio radiation during eclipse, 3363

D

van Daatselaar, C. J., ionospheric absorption observations at K.S.M.L., 3054
Dabbs, J. W. T., with others, crystalline fields and antiferromagnetic transitions, 1370
Dacey, G. C., and I. M. Ross, field-effect transistor, 1240
Daddi, L., with F. Amman, design of pole faces for circular particle accelerators, 2503
Dadson, R. S., with D. W. Robinson, re-determination of equal-loudness relations, 3271
Dahlke, W., transformation rules for noisy quadripoles, 688
—— with H. Rothe, theory of noisy fourpoles, 2665
Dalton, R. H., solder glass sealing, 3462
Daly, N. R., and K. G. Emeléus, initiation of hot-cathode discharges, 951
—— with K. G. Emeléus, ion oscillations in cathode potential minimum, 2020
Damon, R. W., magnetically controlled directional coupler, 667
Danan, H., law of approach to saturation for Fe Si single crystal, 2129
Danforth, W. E., and J. H. Bedine, polarization in TiO_2 crystals, 2419
Daniel, E., with others, lattice defects and absorption of e.m. radiation by Cu_2O, 2446
Daniel, E. D., and P. E. Axon, absolute measurements in magnetic recording, 318
Daniel, F. T., with P. L. Rice, transmission loss vs distance and aerial height, 1531
Daniels, W. R., time lag in photoconductors, 3078
Danielson, W. E., J. L. Rosenfeld and J. A. Saxton, beam formation with Pierce-type guns, 2581
Danner, H. R., and R. Pepinsky, specific heat anomaly of $Cd_2Nb_2O_7$, 449
—— with others, neutron analysis of tetragonal $BaTiO_3$, 1072
Darbyshire, J. A., electron gun of c.r. tube, 950
Darmois, G., resistivity of thin films, 3762
Darner, C. L., and R. J. Bobber, ultrasonic shutter, 645
Das, J., pulse-slope modulation, characteristics of, 561, noise characteristics of, 1205
Das, J. N., with others, PbS point-contact rectifiers, 2560
Das, P. N., saturable reactors as magnetic amplifiers, 3320
Das Gupta, M. K., with R. C. Jennison, angular diameter of radio sources, 1700
Dash, W. C., and R. Newman, optical absorption in Ge and Si, 465
Dasher, B. J., with K. L. Su, approximation problem for RC low-pass filters, 2993
Datta, S., collision frequency in F region over Calcutta, 1711
—— with others, ionosphere during solar eclipse, 2732
Dauksher, W. J., stable oscillator for S-band radar, 3679
Dauphin, M. A., testing components and valves, 2840
Dauphinee, T. M., and E. Mooser, measuring resistivity and Hall coefficient of semiconductors, 201
Davids, N., and R. W. Parkinson, wave solutions for critical coupling in ionosphere, 1192
Davidson, D., and A. J. Post, over-horizon communications links, 910
Davidson, G. M., and M. Pavelow, potentiometer telemeter, 3841
Davidson, J. A. B., facsimile transmission of weather charts, 2190
Davidson, J. J., high gain transistor amplifier, 1346
Davidson, P. M., growth of current between parallel plates, 388
Davie, O. H., c.r.o. beam-brightening device, (D)3491
Davies, B. F., wide-band linear r.f. amplifier, 3317
Davies, D. L., fast acting phase indicator, 3835
Davies, E. M., with others, printed resistors, 35
Davies, H., Poisson's partial difference equation, 1019
Davies, J. G., and A. C. B. Lovell, Giacobini meteor stream, 410
Davies, K., with W. J. G. Beynon, vertical incidence ionospheric absorption at 2 Mc/s, 755
—— with others, radio observations of ionosphere at oblique incidence, 1850
Davies, S. M., calibration of vibration pickups, 3500
Davis, C. M., and S. F. Perchec, magnetostrictive properties of alfenol, 2825
Davis, D. D., circuits for recurrent surge oscillography, 1165
Davis, H. B., with K. A. Meyers, triangular-wave analogue multiplier, 3287
Davis, J. L., with others, ferromagnetic resonance in Mg-Mn-Al ferrite, 491
Davis, L., Jr, interplanetary magnetic fields and cosmic rays, 1699; fluid self-excited dynamos, 3348
—— with others, surface states on Si and Ge surfaces, 2434
Davis, M., and R. F. Lever, crystal growth of Ge from germane, 3777
—— A. Gabrielov and R. F. Lever, zone melting by electron bombardment, 2147
Davis, P. G., phase-controlled oscillator, 1651
Davis, R. E., with C. Goldberg, magnetoresistance of n-type Ge, 3783
Davy, N., with H. J. Peake, field of cylindrical trough with plane conductor, 1018
Daw, A. N., transistors in parallel, 1662
Day, J. R., beyond-horizon signals extend communications, 265
Dasmond, S. D., scattering systems with elliptic boundaries, 961
Deal, O. E., with R. E. Holzer, low-a.f. e.m. signals of natural origin, 2070
Deam, A. P., and B. M. Fannin, phase-difference variations in 9350-Mc/s signals at spaced aerials, 234
Dean, S. K., and D. F. Nettell, digital potentiometer, 1314
Deavenport, J. E., with others, transistor pulse generators, 358; transistor generator simulates radar target, 2496
De Castro, E., response of nonlinear circuits to oscillations modulated in amplitude and frequency, 2879
Decker, R. W., and D. W. Stebbins, work functions of La, Pr and Nd borides, 167
DeClaris, N., existence theorem for driving-point impedance function, 3665
Deeg, E., and O. Huber, dia-λ dielectric behaviour of clays, 450
DeFaymoreau, E., determination of Tacan accuracy, 3386
DeGrasse, E. W., and G. Wade, electron beam noisiness for field-emission cathode, 3582
Dehn, R., electron trajectories in coaxial diodes, 948; measurement of rapid fluctuations of temperature, 3258
Dehors, R., and L. Garde, observing hysteresis cycles with Illovici permeameter, 2164
Delgen, M. F., bipolar diffusion in semiconductors for spherical symmetry, 2097
DeLange, O. E., regeneration of binary microwave pulses, 1655
Delano, R. H., and I. Pfeffer, effect of a.g.c. on radar tracking noise, 2747
Delattre, P. C., A. M. Liberman and F. S. Cooper, acoustic lori and transitional cues for consonants, 9
Delcher, J., and others, diffusion pump using freon 12, 3393
Delcroix, J. L., with J. Coste, irrotational electron beams, 1902; plasma oscillations in magnetron, 1903
Della Pergola, G., conductivity and Hall effect in semiconductors, 2092
—— and D. Sette, action of etchants on Ge, 2106; apparatus for measurements on semiconductors, 3444
Dellinger, J. H., cooperation in radio research by U.R.S.I. and I.R.E., 3264
Delobeau, F., and K. Suchy, ionospheric absorption at Dakar, 3513
Deloffre, L., É. Pierre and J. Roig, photodiode with alternating magnetic field, 1895
DeLong, V. R., automatic tuning for high-power transmitter, 3238
Delorme, C., influence of substitutions in Cu ferrite and chromite, 1120
Demczynski, S., correlation between decay time and amplitude response, 2328
Dement'ev, B. P., with A. R. Shul'man, secondary emission from alkali halide crystals, 3695
Dement'ev, E. P., noise in u.h.f. amplifiers, 62
Demeshin, V. P., and others, Russian bibliography on telemetering, 869
Dempsey, J., with others, oxide-impregnated Ni-matrix cathode, 626
Denes, P., effect of duration on perception of voicing, 8
Denisov, N. G., interaction of ordinary and extraordinary waves in ionosphere, 2196
Denman, H., with B. Podolsky, generalized macroscopic electrodynamic equations, 2028
Denton, J. J., with L. Hartshorn, calibration of inductance standards, 3134
Déportes, C., with M. Dodero, preparation of alkali ferrites, nickelites and cobaltites, 3461
Deresiewicz, H., with R. D. Mindlin, vibrations of crystal plates, 1322
De Socio, M., imperfectly conducting waveguides, 3634
Destriau, G., electroluminescence, brightness waves in, 1068, reinforcement of, by rotation of crystals, 709
—— and H. F. Ivey, electroluminescence, 780
—— and others, effect of electric fields on X-ray-excited phosphors, 2081
Destriau, M., with others, effect of electric fields on X-ray-excited phosphors, 2081
Desvignes, F., with G. A. Boutry, photodiodes and phototransistors as infrared detectors, 935
Deubner, A., and K. Rambke, conductivity of thin Ag films, 3763
Deuth, A. F., and others, multipath simulator tests communications, 3191
Deutsch, K. H., public mobile radiotelephone service, 1551
DeVaux, L. H., and F. A. Pizzarello, elastic constants of InSb, 2802
Devenny, C. F., Jr, and L. G. Thompson, ferromagnetic computer cores, 497
Devenport, M. H., with others, radio observations on 23rd February 1956, 2717
Devins, J. C., with others, first Townsend coefficient of molecular gases, 395
Devons, S., logarithmic rotation, 1665
DeVore, H. B., spectral distribution of photoconductivity, 2753
DeWitt, J. H., Jr, G. A. Reynolds and L. E. Rawls, experimental six-channel satellite booster system, 2553
Dexter, R. N., and B. Lax, cyclotron absorption in Bi, 1471
Diamond, F., A. Gozzini and T. Kahan, interaction of cm waves with plasma, 1691
Diamond, H., with others, nonlinear d.c.-tuned capacitors, 3663
Diaz, J. B., with G. Birkhoff, nonlinear network problems, 2326
Dicke, R. H., and R. H. Romer, pulse techniques in microwave spectroscopy, 1037
—— with R. H. Romer, technique for microwave spectroscopy, 92
Dickinson, A. H., vertical radiation and tropical broadcasting, 3536
Diemer, G., and W. Hoogenstraaten, hole mobility in CdS, 3791
—— H. A. Klasens and J. G. van Santen, solid-state image intensifiers, 1897
Dieminger, W., s.w. echoes from lower ionosphere, 755
—— K. H. Geiswend and H. G. Möller, echo sounding of ionosphere at oblique incidence, 1414
Dieterle, W., acetylated paper as insulating material, 1144
van Dijk, J. M. F. A., N. Schimmel and E. Goldfeohn, shore-based radio aids, 1055; ramark beacon for use with marine radars, 1056
Dillenburger, W., influence of optical system in television pickup, 596; black-level control in television, 1880
—— and J. Wolf, equipment for single photographs of television pictures, 586
Dillon, I. G., with others, mechanics of zone melting, 1141
Dillon, J. F., Jr, S. Geschwind and V. Jaccarino, ferromagnetic resonance in Mn ferrite, 1134
Dilworth, R. A., interference with television reception, 2899
Di Marco, A., linear 15-kW amplifier, 3559
Dinger, H. E., with M. G. Morgan, observations of whistling atmospherics, 1724
Dingle, R. B., scattering of electrons and holes in semiconductors, 149; infrared absorption in semiconductors, 794; comparison equations in solution of differential equations, 2831
Dion, A., with others, diffraction of microwaves, 2699
Dittrick, N. H., with C. W. Mueller, planar alloy junctions for Ge transistors, 2562
Ditto, S. J., with others, 3 mm-λ radiation from sun, 740
Ditzenberger, J. A., with C. S. Fuller, diffusion of donors and acceptors in Si, 3095
Divoire, É., statistical characteristics of noise, 557
Dmitrieva, M. M., with G. S. Solntsev, two-electrode h.f. discharge, 2689
Dobesch, H., transients in filter amplifiers, 2992
Doctor, N. J., with others, measurement of complex permeability and permittivity, 2845
Dodero, M., with others, preparation of alkali ferrites, nickelites and cobaltites, 3461
Dodington, S. H., airborne Tacan equipment AN/ARN-21, 3386; quartz crystal control at 1 kMc/s, 3386
—— with R. J. Colin, principles of Tacan, 3386
Dodson, G. C., with others, optimum core shape for magnetic amplifiers, 340
Doehler, O., with P. Guénard, E- and C-type travelling-wave devices, 1590
—— with others, carcinotron wide-band oscillator, 620
Dolanský, L. O., electronically generated audio filters, 352
Dolder, K. T., and O. Klemperer, space-charge effects in electron-optical systems, 1363; h.f. oscillations in space charge of electron emission systems, 3581
Doležal, V., and J. Kurzweil, Mikusiński's operational calculus, 1800
Doll, R., with W. Meissner, very-high-sensitivity screened galvanometer, 1160
Dolman, W., and P. W. J. Gamman, radio and radar equipment in H.M. telegraph ships, 2539
Dombrovskaya, T. N., with others, depiction of domains of ferromagnetic material, 1793
Dominé, D., with others, analysis of impurities in gases, 3349
Dominici, P., ionospheric characteristics, at Rome, 3047, during eclipse, 3732
—— and F. Mariani, ionosphere F layer, 750
Donovan, B., Hall effect in metals at high frequencies, 1039
—— and N. H. March, h.f. conductivity in semiconductors, 3411
van Doorn, C. Z., and D. de Nobel, luminescence and width of energy gap of CdTe, 3440
Dorf, R. H., making photo-etched circuits, 1924
Dormont, H., with others, photomultiplier tube for scintillation count-

ing, 299
Dorn, C. G., fast-rise pulse generator, 3291
Dorrenbacher, C. J., with others, telemetering aerial system for supersonic aircraft, 3623
Dorsey, S. E., tinner codes oscillograph recordings, 3154
van Dorsten, A. C., and J. B. Le Poole, Type-EM75kV electron microscope, 1841
Doser, B. T., with W. C. Michels, rating-scale method for loudness measurements, 1292
Douce, J. L., with others, analysis of nonlinear feedback systems, 3223
Doyle, T. C., theory of network, 343
Dranetz, A. I., with J. L. Upham, Jr, transistor modulator for airborne recording, 3181
Draper, L., with M. J. Tucker, high-*Q RC* feedback filter, 49
Dreher, J. J., with H. M. Moser, phonemic confusion vectors, 652; effects of training on listeners, 1290
Drenick, R. F., with A. H. Benner, detection of pulsed signals in noise, 439
Dresselhaus, G., spin-orbit coupling effects in zinc blende structures, 1139
—— A. F. Kip and C. Kittel, plasma resonance in crystals, 1108
—— and others, cyclotron resonance in Ge-Si alloys, 1456
Dreyer, H. J., program-controlled computers, 1639
Dreyfus, B., resonance field strength for system of magnetic sublattices, 185; equations of ferrimagnetic resonance, 1122
—— with J. Paulevé, resonance of ferrites in circularly polarized field, 2465
Drigo, A., study of ferromagnetism at Ferrara University, 2362
Driver, G. E., transistor h.f. power supply, 3539
Drokin, A. I., and V. L. Il'yushenko, temperature dependence of magnetization of Ni, 2131
Drougard, M. E., with others, polarization reversal in $BaTiO_3$, 3759
Dubois, M., sensitive gaseous and liquid jets, 3603
Duchamp, R., large-screen curve tracer, 861
Duchesne, J., and A. Monfils, r.f. absorption spectra of piezoelectric solids, 455
—— with A. Lallemand, star spectra by electronic photography, 3161
Duckworth, H. E., with others, reliability of atomic masses in Cr-Ge region, 96
Duclos, P., with others, preparation and effective masses for InSb, 3108
Duffin, R. J., and E. Keitzer, formulae relating equivalent networks, 3664
Dufour, C., spectral sensitivity of photocathodes, 2246
Dukes, J. M. C., investigation of strip transmission lines with electrolyte tank, 2283
Dumas, G., gyromagnetic resonance in Penning gauge, 73
Dumke, W. P., deformation potential theory for Ge, 2111
—— with others, infrared absorption of InSb, 2119
Dummer, G. W. A., high-temperature components, 3658
Dumontet, P., with others, stationary random functions, 3467; square-law detection of background noise, 3524
Duncan, B. J., and L. Swern, temperature behaviour of ferrites in waveguide, 2291
Duncan, R. A., lunar variations in ionosphere, 2733
Duncan, R. S., and H. A. Stone, Jr, application of ferrites to inductor design, 995
Dungey, J. W., electrodynamics of outer atmosphere, 755; influence of geomagnetic field on turbulence in ionosphere, 2063; ambipolar diffusion in night-time F layer, 3729
—— and A. J. Willson, viscosity in F region, 1410
Dunkin, E. F., and D. L. Johnston, subminiature transformers and transductors, 1975
Dunlap, W. C., Jr, ambipoteric impurity action in Ge, 1763
Dunn, D. A., and W. A. Harman, experimental transverse-current travelling-wave valve, 3253
—— and others, transverse-current travelling-wave valve, 3252
Dunn, F., F. J. Fry and W. J. Fry, characteristics of resonant-frequency crystal systems, 3601
—— with W. J. Fry, ultrasonic irradiation of nervous system, 2178
Dunsmuir, R., with others, resonant-cavity method for measuring resistivity, 2158
Durana, V., with R. Bechmann, temperature variation of quartz resonators, 1639
Durand, E., theory of magnetic masses, 81; transformation of integral and application to magnetostatics, 82; magnetic systems associated with permanent currents, 1682; expression for scalar potential of line current, 1683; potential due to charged disk, 2016; equations of non-conservative electromagnetism, 2694
Durandeau, P., magnetic electron lenses, general expressions and curves for, 2846, construction of, 3169
Durieux, C. W., and T. A. Prugh, microphonism due to transistor leads, 3246
Durkee, A. L., with others, propagation test at 505 Mc/s and 4090 Mc/s on beyond-horizon paths, 234
Durrant, N. F., measurement of minority carrier lifetimes, 147
Dütsch, H. U., atmospheric ozone as air-stream indicator, 2047
Dutton, J., with others, pre-breakdown ionization currents in hydrogen, 1023
Dyce, R. B., auroral echoes observed north of auroral zone, 429; v.h.f. auroral and E_s propagation, 1533
Dyer, H. B., and P. T. Wedepohl, electrical measurements on type-IIb diamonds, 2785
Dyke, W. P., and J. P. Barbour, electron projection microscopy, 2843
—— and others, temperature-and-field emission from tungsten, 392
—— with others, electron emission from clean tungsten, 1912
Dyson, F. J., thermodynamic behaviour of ferromagnet, 3696
Dzierzgwa, H., and H. Lange, luminescence of calcium silicate (Mn, Pb) and zinc-beryllium silicate (Mn), 136
—— and H. Panke, yellow luminescence due to titanium in magnesium silicate containing fluoride, 1066
Dzierzynski, O. E., measurement of wow and flutter, 13; simplified band-III converter, 1564, 2236; slide-back valve voltmeter, 3406

E

Eames, A. R., with L. R. Blake, transistor frequency meters, 3494
Earnshaw, J. B., diode pump integrator, 1007
Easter, B., band-pass characteristics of low asymmetry, 1992
Easterday, H. T., with others, disintegration of Ge^{68}, 3784
Eastwood, E., T. R. Blakemore and B. J. Witt, coherent M.T.I. radar on 50 cm, 3587
Ebers, J. J., alloyed-junction transistor development, 2242
—— with S. L. Miller, alloyed-junction avalanche transistors, 293
Ebert, W., receiving side of broadcast transmission and a.f. bandwidth, 3881
Echizenya, Y., S. Katano and Y. Ogata, F_2-layer multiple reflections, 894
Eckart, F., dark current of secondary-electron multipliers, 930; conductivity measurements on Se, 2782
—— and A. Schmidt, Se rectifiers with various impurities, 271
Ecker, G., statistical description of assemblies with collective interaction, 384
Eckert, O., E. Weides and K. Wallenfang, quality of ferrites for computers, 1629
Eckess, W. S., J. E. Deavenport and K. I. Sherman, transistor pulse generators, 358; transistor generator simulates radar target, 2496
Economos, G., magnetic ceramics, ferrite preparation, 192
Edelman, S., E. Jones and E. R. Smith, developments in vibration measurement, 325
—— with others, measurement of correlation coefficients in reverberant sound fields, 1284
Edmond, J. T., with R. Barrie, study of conduction band of InSb, 145
Edwards, A. G., effect of atmospherics on tuned circuits, 1538
Edwards, D. B. G., digital computer techniques, 2971
Edwards, H. D., and others, balloon-borne system for tracking sun, 3844
Edwards, L. C., with others, ionospheric scatter techniques, 3185
Edwards, S., Jr, with M. A. Melvin, theory of vibrations, 2597
Edwards, W. D., frequency-stable transistor audio oscillator, 1335
Egedal, J., and N. Ambolt, effect on geomagnetism of solar eclipse, 107
Egerton, L., and S. E. Koonce, effect of firing cycle on $BaTiO_3$ ceramics, 1434
Eggleston, F. K., with others, high-temperature TiO_2 rectifiers, 1218
Egidi, C., and F. Maggiore, parasitic radiations from television receivers, 2237
—— with M. Boella, propagation time of standard time signals, 1190
Ehler, A. W., and G. L. Weissler, ultraviolet absorption of atomic nitrogen, 2013
Eichin, W., directional attenuator with delay line and ferrite element, 3300
Eigler, J. H., with M. V. Sullivan, electrolytic-stream etching of Ge, 2797; metal hydrides as alloying agents on Si, 3818
Eisner, I. Ya., properties of ferroelectric-salt crystals, 2770
Ekstein, H., theory of remagnetization of tapes, 1125
—— and N. Rostoker, quantum theory of fluctuations, 1350
Eldin, J., with P. Bassole, utilization of valves on French long-distance lines, 2254
Eldredge, E. E., with others, multiple-frequency-shift teletype systems, 564
Eley, D. D., and G. D. Parfitt, semiconductivity of organic substances, 1457
Ellett, A., with A. L. C. Webb, phonevision subscription television, 1223, 2547
Elliott, J. F., S. Legvold and F. H. Spedding, magnetic properties of erbium, 1787
Ellis, G. R., *Z* propagation hole in ionosphere, 2195; propagation, of whistling atmospherics, 3058, through upper ionosphere, 3514
—— with G. Reber, cosmic r.f. radiation near 1 Mc/s, 2369
Ellis, S. G., dislocations in Ge, 466; etching at grain boundaries in Ge, 1446
Ellison, M. A., and J. H. Reid, long-wave anomaly on 23rd February 1956, 2716
Ellyett, C. D., and G. J. Fraser, influence of noise on radar meteor observations, 99
—— and K. W. Roth, radar determination of meteor showers, 739
El-Said, M. A. H., geophysical prospecting for water by means of e.m. interference, 1171, (D)3187
Elsässer, H., and H. Siedentopf, height of emission of 5577 line of airglow, 2738
Elsasser, W. M., hydromagnetic dynamo theory, 3355
Elsmore, B., and G. R. Whitfield, lunar occultation of radio star, 97
Elvey, C. T., and others, distribution of auroras in Alaska, 1722
Embleton, T. F. W., propagation of sound pulses, 2599; radiation force on spherical obstacle, 2836
Emelèus, K. G., oscillations in gas discharges, 3692
—— and T. K. Allen, plasma-electron oscillations, 86
—— and N. R. Daly, ion oscillations in cathode-potential minimum, 2020
—— with N. R. Daly, initiation of hot-cathode discharges, 951
—— with others, appearance of oscillating discharges, 633
Emerson, W. H., A. G. Sands and M. V. McDowell, wide-band absorbing materials, 1470
Emmens, H., with F. de Boer, sedimentation of fluorescent screens, 636
Emslie, N. M., basic chassis, 336
Enfield, A. W., with others, design of r.f. permeameter, 3482
Enge, H. A., half-wave rectifier circuits, 3888
Engiman, R., and E. H. Sondheimer, conductivity of anisotropic thin films, 3084
Epelboin, I., and M. Erny, electrical anisotropy of Ga near fusion point, 837
Epstein, D. W., P. Kaus and D. D. VanOrmer, improvements in colour kinescopes, 1567
Epstein, E. S., C. Osterberg and A. Adel, atmospheric ozone as function of height, 3044
Epstein, J., engineering aspects of u.h.f. booster installation, 2553
—— with R. W. Klopfenstein, polarguide waveguide filter, 1330
Epstein, P. S., propagation in gyromagnetic medium, 2031
Epostein, B., instability of electron beams in magnetic field, 2568
—— and G. Mourier, phase velocities in systems with periodic structure, 1907
—— with others, carmatron wide-band oscillator, 620
Eriksen, G., Ø. Hauge and E. Tandberg-Hanssen, r.f. observations of solar eclipse 30th June 1954, 3719
Erkens, A., quartz-controlled oscillators, 2998
Erny, M., with I. Epelboin, electrical anisotropy of Ga near fusion point, 837
Ersakanyan, G. A., with V. A. Sanamyan, r.f. emission from sun during eclipse, 2370
Esbleman, V. R., radio reflections from electron-ion clouds, 1191
—— with others, meteor ionization trails, in extended-range v.h.f. propagation, 236, oblique reflections from, 3509
Espe, W., mercury in vacuum technique, 3392
Essen, L., new definition of unit of time, 200; standard-frequency transmissions, (D)514; MSF standard frequencies in terms of Cs resonance, 2839; atomic time and definition of second, 3469
—— and J. V. L. Parry, atomic and astronomical time, 2471
Ettinger, G. M., voltage-controlled attenuator, 50
Euler, F. J., and P. A. Virbal, cinerôntgenography, 3174
Evans, D. M., measurements on Ge transistors, 2903
Evans, J., with others, improvements in Type-21AXP22 colour kinescope, 3554
Evans, S., with others, radio echoes from meteor trails, 2037
Evans, W. E., and R. F. Lowe, quadriphase time-division multiplexing, 566
Everett, D. H., general approach to hysteresis, 1351
Ewald, A. W., with E. E. Kohnke, Hall effect in grey tin, 3795
Exley, F., and R. E. Young, grounded-grid valve system, 2589
Exterman, R., with others, nuclear magnetic resonance in weak fields, 1694
Eyfrig, R., effect of geomagnetism on F, layer, 421
Eyraud, I., with G. Mesnard, electromechanical properties of $BaTiO_3$ ceramics, 2083

F

Fabrikov, V. A., Faraday effect in paraffin-ferrite mixtures, 493
Fagot, J., problems of transmission over radio links, 2199
Fain, V. M., velocity distribution of electrons in alternating electric and constant magnetic fields, 79; radiation from molecules in h.f. field, 2033
—— with S. A. Zhevakin, nonlinear effects in ionosphere, 3856
Fainberg, Ya. B., and N. A. Khizhnyak, anisotropic media, 979
Fairbank, W. M., with others, superconductivity at mm λ, 1356
Fairhurst, H. A., experimental colour receiver, 1882
Fairweather, A., dielectric absorption in polar solutions, 1739
Fan, H. Y., W. Spitzer and R. J. Collins, infrared absorption in *n*-type Ge, 2110
—— with W. G. Spitzer, infrared absorption in InSb, 814
Fanchenko, S. D., with E. K. Zavoiski, electron-optical chronography, 3502
Fancourt, K. G., and J. K. Skwirzynski, simple frequency discriminator, 3325
Fannin, B. M., with A. P. Deam, phase-difference variations in 9350-Mc/s signals at spaced aerials, 234
Fano, R. M., thoughts on technical meetings, 1600
Faragó, P. S., and G. Marx, quantum effects in interaction between electrons and fields, 393
Farber, R. J., with others, colour-television-receiver design, 1881
Farbshtein, I. I., with A. R. Shul'man, scattering of electrons by Ni and Mo targets, 719
Fark, H., transverse waves on strings, 2929
Farmer, E. D., junction admittance between waveguides, 2286
Farnsworth, H. E., with R. B. Allen, effect of ion bombardment of Ge on point-contact rectification, 3240
Farrands, J. L., and G. F. Cawsey, microwave observations of detonation, 1833
Farrar, E. N., and M. T. O'Dwyer, R/T for control of works transport, 579
Fast, J. F., with G. W. Rathenau, initial permeabilities of sintered ferrites, 2136
Fastert, H. W., radiation diagrams of ring arrays, 982
Faudell, C. L., television studio lighting, 2239
Favre, R., multistable circuit with quinary cycle, 341
Fedde, G. A., with others, status of 'apple' receiver circuits, 3893
Feddersen, W. E., with others, localization of sound sources, 649
Fedida, S., wide-band microwave radio links, 568
Fedorov, F. I., theory of total reflection, 1375
Fedorova, N. N., with N. A. Goryunova, isomorphism of compounds of type $A^{III}B^{V}$, 3096
Fedorovich, V. N., measurement of acoustic impedance, 1942
Fedotova, T. M., with others, ferroelectric properties of stannates, 3485
Feher, G., R. C. Fletcher and E. A. Gere, spin resonance of impurity atoms in Si, 1760
Fehér, K., amplitude distribution of plane surfaces, 2600
Feik, K., directed sound, 646
Feinberg, E. L., with S. G. Gershman, measurement of correlation coefficient, 1968
Feinberg, R., and K. C. Burn, new h.v. low-current triodes, 2261
—— with others, recording high-speed single-stroke transients, 1494
Fejer, J. A., interaction of radio waves in ionosphere, 1521; tropospheric scatter propagation and transmission loss, 2870
Fekhikher, A., expression for powers of a matrix, 1326
Fel'd, Ya. N., infinite equations linked with infinite periodic systems, 1955; incidence of e.m. waves at double infinite grids, 2696
Feldheim, F. S., with others, punched cards control assembly system, 960
Feldman, E. F., a.f. spectrum analyser, 1163
Feldmann, W. L., with others, noise in Si *p-n*-junction photocells, 1900
Feldtkeller, R., with E. Zwicker, loudness of steady noises, 1604
Fenton, K. B., with others, effective geomagnetic equator, 3721
Feofilov, P. P., with B. S. Neporent, 4th symposium on luminescence, 2679
Ferebee, S. F., with C. M. Davis, magnetostrictive properties of alfenol, 2825
Ferguson, W. F. C., with J. F. Hall, Jr, optical properties of CdS and ZnS, 1062
Fernandes Huerta, A., synthesis of aerial arrays, 983
Fernando, W. M. G., and H. E. M. Barlow, radial cylindrical surface waves, 2282
Ferretti, L., and P. Veronesi, influence of magnetic field on h.f. gas discharge, 716
Ferro, A., and G. Montalenti, influence of carbon in iron and iron alloys, 1463
Fert, C., and B. Marty, use of cylindrical lens in reflection electron microscope, 1182
Fesenko, E. G., with others, single crystals of Ba and Sr titanate solid solutions, 3757
Feth, G. C., with L. A. Finzi, magnetic amplifiers in bistable operation, 1661
Fetz, H., electron liberation by low-energy ions, 386
Février, C., phase-bridge frequency meters, 2176
Fialkow, A., and I. Gerst, impedance synthesis without minimization, 1987
Fidecaro, G., and A. M. Wetherell, design of distributed amplifiers, 2670
Fidrya, A. K., with others, conductivity of Bi_2O_3, 3110
Field, L. M., with others, transverse-current travelling-wave valve, 3252
Fieschi, R., thermodynamic theory of galvanomagnetic and thermomagnetic phenomena, 1390
Filipowsky, R., pulse communication systems, 261, 562, 1546; multichannel system with automatically variable number of pulses, 1204
Findlay, D. A., electronic controls for machine tools, 1502
Fink, D. G., transistors versus vacuum tubes, 2244
Finkle, M., with S. Shenfeld, storage-tube device simulates radar net, 2077
Finzi, L. A., and G. C. Feth, magnetic amplifiers in bistable operation, 1661
Firle, T. E., low-frequency spectrum analyser, 2855
Firmin, J. C., and C. W. Oatley, effects of metal electrodes in electron-bombardment conductivity, 843
Firsov, Yu. A., with G. E. Pikus, conference on theory of semiconductors, 3767
Fischell, R. E., stress on magnetic laminations, 182
Fischer, A., air safety service at Zürich, 1424
Fischer, E. W., and H. Richter, structural changes in Ge films, 811
Fischer, J., and H. Moser, approximate representation of magnetization curves, 3459
Fitton, E. D., and R. E. Howland, line transmission circuits, 2614
Fitzgerald, R. B., with others, objective and subjective observations on music rooms, 11
Fix, H., with R. Theile, signal/noise ratio in television, 2897
Flanagan, J. L., formant frequencies in continuous speech, 1944; bandwidth and channel capacity for speech, 3413
Flanders, P. J., with others, ferromagnetism in noble-metal alloys containing Mn, 175
Flaschen, S. S., and L. G. Van Uitert, low-contact-resistance electrode, 2124
Fleischer, H., and H. Widdra, frequency-band recorder, 2175
Fleming, L., capacitance transducer circuit, 228
—— and W. W. Follin, subaudio oscillator tunes 0–50 c/s, 59
Fletcher, G. C., magnetostriction constants for Ni, 1137
Fletcher, N. H., self-bias cut-off effect in power transistors, 604
Fletcher, R. C., W. A. Yager and F. R. Merritt, quantum effects in cyclotron resonance, 1093
—— with others, spin resonance of impurity atoms in Si, 1760
Florescu, N. A., ultimate vacuum in vapour pumps, 3074
Flügge, S., Handbuch der Physik, Band 33 : Korpuskularoptik, (B)3852
Flynn, P. T. G., field-dependent conductivity and electrical breakdown, 72
Focha, P. D., energy gap of semiconductors from diffuse reflection spectra, 2101
Folberth, O. G., mixed crystals of $A^{III}B^{V}$ compounds, 2095
—— and H. Weiss, preparation and properties of InP and GaAs, 3107
Folkierski, A., input amplifier for pulse-height analyser, 3311
Follin, W. W., with L. Fleming, subaudio oscillator tunes 0–50 c/s, 59
Fomenko, L. A., magnetic spectra of Ni-Zn ferrites, 3120
Foner, S., Hall effect, in permalloys, 487, of armco iron, 2819
Forbush, S. E., variations in strength of wind system in dynamo mechanism, 2373
—— and E. H. Vestine, sudden commencements of magnetic storms at Huancayo, 415
Ford, L. H., with G. H. Rayner, effect of humidity on stability of inductance standards, 2472
Ford, R. L., electrical analogues for heat exchangers, 1503
Forman, R., properties of pore conductors, 630
Forrat, F., with F. Bertaut, structure of rare-earth ferrites, 1790; perovskites composed of rare earths and transition elements, 2820
Forrester, A. T., R. A. Gudmundsen and P. O. Johnson, photoelectric mixing of incoherent light, 710
Forster, J. H., with L. E. Miller, accelerated aging with Li-doped transistors, 1242
Forsyth, P. A., C. O. Hines and E. L. Vogan, variations in number of shower meteors detected by forward scattering, 1046
—— with others, dependence of meteoric forward-scattering on aerial patterns, 1198
Fortet, R., vectors, matrices and determinants, tensors, 1150
Fortini, T., decreasing phase of last solar cycle, 1047
Foster, K., parabolic-cylinder aerials, 1627
Fougere, G. L., maximum power transfer in transistor amplifiers, 369
Foulds, K. W. H., resonant-cavity measurements of permittivity of discharge, 80
Fowler, C. A., Jr, and E. M. Fryer magnetic domains in thin films of Ni-Fe, 1132
Fowler, C. S., v.l.f. receiver with high selectivity, 3530
—— with G. E. Ashwell, phase change of l.f. ground waves, 3857
—— with others, phase of l.f. ground wave propagated across coastline, 3194
Fox, L., Bessel Functions of Integer Orders and Large Arguments, (B) 199
Francis, H. T., with D. R. Makar, self-balancing zero-resistance ammeter, 2168
Frank, E., calculation of roots of equations, 2148
Franki, D. R., electroluminescence of ZnS crystals, 1432
Franklin, E., and J. B. James, application of transistors to radiation monitors, 3175
Franklin, P. J., with others, printed resistors, 35; measurement of complex permeability and permittivity, 2845

Franz, W., and R. Galle, semi-asymptotic series for diffraction of plane wave, **1377**
Fraser, G. J., with C. D. Ellyett, influence of noise on radar meteor observations, **99**
Fraser, P. A., with M. Romanowski, primary winding of Campbell standard inductor, **1831**
Fraser, W., wide-range phase-shift oscillator, **2335**
Fraunberger, F., h.f. method for investigations of magnetic alloys, **1504**
Fray, S. J., with L. M. Roberts, theory for solid-backed bolometers, **2857**
Frazer, B. C., H. R. Danner and R. Pepinsky, neutron analysis of tetragonal $BaTiO_3$, **1072**
—— with others, diffraction study of $PbTiO_3$, **2771**
Frederikse, H. P. R., and R. F. Blunt, photoeffects in intermetallic compounds, **769**
—— and I. V. Mielczarek, thermoelectric power of InSb, **813**
—— with others, properties of Mg_2Sn, **1104**
Frei, E. H., with others, circuit element using magnetoresistive effect, **1319**
Frelot, T., with R. Combe, production of mm waves by undulator, **1034**
Frémiot, C., with others, rain echoes with 3-cm-λ radar with circular polarization, **763**
Freund, R. E., thermoluminescence measurements of ZnS:Mn films, **1069**
Frey, J., with others, ferrites with perminvar-type hysteresis loops, **489**
Friedel, J., ferromagnetism in transition metals, **1369**
Friedlander, F. G., and J. B. Keller, asymptotic expansions of solutions of $(\nabla^2 + k^2)\,u = 0$, **398**
Friedman, H., and T. A. Chubb, solar X-ray emission and bright of D layer during fade-out, **755**
—— with others, ionospheric F_2 region, **755**; solar X-ray spectrum and density of upper atmosphere, **3375**
Friedman, N., and C. Macpherson, cardioid microphone, **970**
Friedman, T. B., with L. Katz, u.h.f. satellite transmitter-receiver, **2553**
Frisch, E., equivalent-circuit constants of high-Q resonators, **3476**
Fritts, E. C., 16-mm projector for television with partial storage, **1225**
Fritzsche, C., semiconductor properties of $ZnAs_2$, **2800**
Fritzsche, H., properties of Ge at low temperatures, **153**
—— and K. Lark-Horovitz, properties of p-type InSb at low temperatures, **160**
Friz, W., with W. Klein, gas-discharge tube for noise measurement, **3484**
Fröhlich, H., theory of secondary emission, **720**
Fröling, H. E., test-line technique in television, **587**
Frommhold, L., statistics of electron avalanches in uniform field, **3023**
Fromy, E., with others, recording r.f. interference, **3488**
Frood, D. G., and J. R. Wait, slot radiators in rectangular plates, **1309**
Froome, K. D., refractive indices of water vapour etc. at 72 kMc/s, **1016**
Frost, H. B., cathode-interface impedance desimplified, **2584**
Fry, F. J., with others, characteristics of resonant-frequency crystal systems, **2601**
Fry, W. J., and F. Dunn, ultrasonic irradiation of nervous system, **2178**
—— with others, characteristics of resonant-frequency crystal systems, **2601**
Fryer, E. M., with C. A. Fowler, Jr, magnetic domains in thin films of Ni-Fe, **1132**
Fuchs, H., d.c. amplifier for slow analogue computer, **989**
Fucks, W., and others, starting of gas discharge in a.c. field, **3338**
Fujita, H., with Y. Nakata, eigenvalues of free plate, **962**
Fukatsu, M., with others, solar corona and geomagnetism, **2042**
Fukuoka, N., with others, magnetic and electric properties of MnTe, **2812**
Fukushima, M., with others, studies on diffracted waves from a mountain, **898**
Fuller, C. S., and J. A. Ditzenberger, diffusion of donors and acceptors in Si, **3095**
—— with H. Reiss, solubility of Li in B-doped Si, **2787**
—— with others, chemical interactions among defects in Ge and Si, **3092**
Funk, S., nonlinearity tolerances for television systems, **595**
Furlow, M. W., with R. C. Benoit, Jr, wide-aperture direction finders, **330**
Furth, H. P., and R. W. Wanock, production of high transient magnetic fields, **3030**
Fürth, R., analysis of star scintillations for investigating atmospheric disturbances, **755**
Furutsu, K., propagation of e.m. waves across boundary, over flat earth, **541**, **1848**, over spherical earth, **2191**; field strength in diffraction by spherical surface, **3186**
Fuse, S., and S. Soma, field intensity measuring, **2525**

G

Gabor, D., collective oscillations and characteristic electron energy losses, **1678**
—— and G. D. Sims, magnetron theory, **(D)1586**
—— with G. D. Sims, theory of pre-oscillating magnetron, **938**
Gabovich, M. D., space charge effect on beams of charged particles, **77**
Gait, J. J., with others, triode analogue computer, **2300**
Gajewski, R., transients in waveguides, **1300**
Galkin, A. A., with others, resistance of superconducting tin at 7.3 × 10^{-4} cycles, **1776**
Gallagher, P. B., with others, aspect-sensitive radio reflections from ionosphere, **1527**
Galle, R., with W. Franz, semiasymptotic series for diffraction of plane wave, **1377**
Gallet, R. M., aerodynamic mechanisms of fluctuations in ionized layers, **234**
Galman, H., expanded-scale voltmeter, **857**
Gal'perin, B. S., contact noise, **34**
Galt, J. K., with others, ferromagnetic resonance in Ni-Fe ferrites, **492**; frequency dependence of magnetocrystalline anisotropy, **835**
Gamble, G. W., C. J. Godwin and F. S. Feldheim, punched cards control assembly system, **960**
Gammon, P. W. J., with W. Dolman, radio and radar equipment in H.M. telegraph ships, **2539**
Ganz, E., and K. Michel, climatic influences in development of electronic equipment, **3598**
Ganzhorn, K., with A. Krosa, transistors in computer technique, **1629**
Gaponov, A. V., thin aerials in cavity resonators, **1641**
Garde, L., with R. Dobors, observing hysteresis cycles with Hlovici permeameter, **2164**
Garfunkel, M. P., with others, mm-wave absorption in superconducting Al, **2354**
Garlick, G. F. J., cathodoluminescence, **779**; physics of scintillation counter, **886**
—— with A. Halperin, absorption spectrum of CdS, **774**
Garreta, O., 'punch-through' voltage of transistor, **925**
Garrett, C. G. B., physics of semiconductor surfaces, **3768**
—— and W. H. Brattain, theory of semiconductor surfaces, **146**; surface breakdown of transistors, **2561**
—— with J. T. Law, surface properties of Ge, **3431**
Garton, C. G., with K. H. Stark, electric strength of irradiated polythene, **1146**
Gaschl, J., transistor equivalent circuits, **2904**
Gasiorowicz, S., M. Neuman and R. J. Riddell, Jr, dynamics of ionized media, **2361**
Gassmann, G., airborne ionospheric measurements, **2382**
Gasson, D. B., four-probe apparatus for measuring resistivity, **2476**
Gatti, E., with others, high-sensitivity pulse trigger circuit, **1336**
Gautier, P., relation between arbitrary field and field of revolution, **718**; exploring coil for measuring magnetic field, **2486**
Gavilán, E., with others, plan for television in Spain, **2230**
Garwin, R. L., with others, spin-echo storage, **1038**
Gávrilyuk, V. M., with N. D. Morgulis, influence of adsorbed film on work function, **3027**
Gaynor, J., with others, e.s. charges in plastics, **2684**
Gea Sacasa, R., oblique incidence and sunspots, **2202**
Geballe, T. H., with F. J. Morin, conductivity and Seebeck effect in Ni ferrite, **173**
—— with others, Hall effect and conductivity of InSb, **1772**
Gebbie, H. A., and G. A. Vanasse, interferometric spectroscopy in far infrared, **3687**
Gebhard, J. W., with others, sensitivity to changes in interruption rate of white noise, **1943**
Geisweid, K. H., with others, echo sounding of ionosphere at oblique incidence, **1414**
Geller, R., with others, diffusion pump using freon 12, **3393**
Geller, Z., and W. Low, amplification of 1-cm waves in He negative glow, **715**
Gel'mont, Z. Ya., with others, piezodielectric high-pass filter, **48**
Gemmel, F., with H. Lueg, dielectric constant of loss-free solid bodies, **210**
Gent, S. E., and D. J. S. Westwood, vision a.g.c. system, **281**
Gentner, R., with A. Leblond, semiconductor structure for h.f. oscillations, **1888**
George, R. W., electromechanical filters for 100 kc/s, **1002**
Gerber, T., comparative tests on relay contacts, **2310**
Gere, E. A., with others, spin resonance of impurity atoms in Si, **1760**
Gerks, I. H., spacing of terminals in u.h.f. link, **234**
Gerlach, L., with P. Levesque, metallography of ferrites, **3453**
Gerlich, D., with others, carrier-deficit phenomena in Ge, **1096**
Gershberg, A. F., measurement of cathode temperature, **2916**
Gershman, B. N., and V. L. Ginzburg, influence of magnetic field on convective instability in ionosphere, **3371**
Gershman, S. G., and E. L. Pemberg, measurement of correlation coefficient, **1968**
Gerson, N. C., sporadic-E movements, **118**
Gerst, I., with A. Fialkow, impedance synthesis without minimization, **1987**
Gertsenshtein, M. E., theory of shot effect, **1581**; fluctuations in electron gas, **1582**
Geschwind, S., with others, ferromagnetic resonance in Mn ferrite, **1134**
Getmantsev, G. G., K. S. Stankevich and V. S. Troitski, 91·6-cm radiation of deuterium in galaxy, **408**
Gevers, R., transport of injected electrons and holes, **1439**
Geyger, W. A., magnetic servo amplifier, **1660**
Ghandi, S. K., with others, transistor test equipment, **526**
Ghijsen, H. W., standardization of components, **32**
Ghosh, D. K., absorption of microwaves, in phenol etc., **1692**, in substituted phenols, **2032**
Ghosh, M., F-region collision frequency over Calcutta, **2056**
Ghosh, S. N., charge transfer in upper atmosphere, **3365**
Giacoletto, L. J., variations of transistor α with emitter current, **294**
—— and J. O'Donnell, variable-capacitance junction diode, **2559**
Giampietro, M., television standards in Uruguay, **2550**
Gianola, U. F., application of Wiedemann effect to magnetostrictive coupling, **350**; photovoltaic noise in Si p-n junctions, **1899**
—— and D. B. James, ferromagnetic coupling between crossed coils, **3293**
Gibbons, J. J., solving coupled equations of plane wave propagation in ionosphere, **755**; Lorentz invariant problem of motion of electric fluids, **1688**
Gibbons, M. D., with V. L. Stout, gettering by Ti, **1428**
Gibson, A. F., absorption of 39-kMc/s radiation in Ge, **3100**
Gibson, J., with O. M. Woodward, Jr, omnigude television aerial, **2297**
Gibson, W. G., with A. C. Schroeder, television vertical aperture compensation, **1885**
Gielessen, J., and K. H. v. Klitzing, Hall effect of InSb at high pressures, **3794**
Giger, A., critical-value problem relative to nonlinear differential equation, **3464**
Gigon, J., with G. Mayer, measurement of elastic constants using ultrasonics, **867**
Gilbert, M., visibility of noise as function of frequency, **1234**
Gilchrist, R., with others, $BaTiO(C_2O_4)_2 \cdot 4H_2O$ for $BaTiO_3$, **3399**
Gilfillan, E. S., with G. W. G. Court, determination of ionospheric winds, **2388**
Gilfrich, H. P., destruction of phosphors by H^+ ions, **3752**
Gill, P. S., with S. P. Puri, analysis of spuriousness of G-M tubes, **2511**
Gillespie, A. B., control and instrumentation of nuclear reactor, **3838**
Gillham, E. J., J. S. Preston and B. E. Williams, study of gold films, **836**
Gilson, R. B., with D. M. Leakey, ultralinear output transformers, **677**
Ginat, M., with others, eclipse of Crab nebula, **2711**; multiple-aerial interferometer at Nançay, **3644**
Ginzburg, V. L., and V. P. Silin, conductivity and skin effect in metals, **711**
—— with B. N. Gershman, influence of magnetic field on convective instability in ionosphere, **3371**
Gitlin, S. A., delay line simulates radar targets, **3070**
Glua, E., differential amplifiers, **2671**
Givens, M. P., C. J. Kooster and W. L. Goffe, X-ray absorption of Te and Se, **1440**
Gladwin, A. S., stability of valve generators, **54**; constant-frequency oscillators, **697**; stability criteria for systems with distributed parameters, **992**; oscillator frequency stability, **3305**
Glaser, E. M., and H. Blassbalg, logarithmic voltage quantizer, **1008**
Glaser, W., error of magnetic lenses, **2862**
—— and G. Braun, wave mechanics theory of electron-optical image formation, **707**
Glauberman, M. H., character recognition for business machines, **1316**
—— with R. C. Kelner, magnetic shift register correlator, **3286**
Gleissberg, W., scale of relative sunspot numbers, **3720**
Glen, J. W., irradiation effects in metals, **457**
Glicksman, M., magnetoresistance of Ge-Si alloys, **1455**; semiconductor with two sets of spheroidal energy surfaces, **3786**
Glowatzki, N., catalogue of power-law and Tchebycheff filters, **351**
Gnanalingam, S., and S. Wrecks, D-region echoes at 1·4 Mc/s, **755**
Gobrecht, H., D. Hahn and F. W. Seemann, brightness waves in luminescence of phosphors, **137**
Goddard, A., Jr, with others, balloon-borne system for tracking sun, **3844**
Godwin, C. J., with others, punched cards control assembly system, **960**
Goerlich, P., Die Anwendung der Photozellen, **(B)2512**
Goetz, H., generation of ultrasonics by electrostriction, **310**
Goff, K. W., and D. M. A. Mercer, probe microphone analysis and testing, **1296**
Goffe, W. L., with others, X-ray absorption of Te and Se, **1440**
Gohlke, W., Einführung in die piezoelektrische Messtechnik, **(B)1519**
Gold, L., Hall theory in n-type Ge, **155**
Gold, T., and D. R. Palmer, solar outburst, 23rd February 1956, **2715**
Goldberg, C., and R. E. Davis, magnetoresistance of n-type Ge, **3783**
Goldberg, P. A., e.m. phenomena of natural origin at 1–150 c/s, **3062**
Goldberger, A. K., with P. Palmel, O-type carcinotron, **1904**
Goldbohm, E., with others, shore-based radio aids, **1055**; ramark beacon for use with marine radars, **1056**
Goldenberg, H., Laplace transformation, **1798**
Goldey, J. M., with others, p-n-p-n transistor switches, **3899**
Goldin, L. L., and D. G. Kolkarev, synchrotron oscillations in strong-focusing accelerators, **1839**
Golding, J. F., signal generator in telecommunications, **2841**
Goldman, J. E., with H. M. A. Urquhart, magnetostrictive effects in antiferromagnetic haematite, **2816**
Goldman, R. B., with others, design and performance of e.s. loudspeaker, **1298**
Gol'dman, Z. A., non-additivity in Se photocells, **2921**
Goldsmid, H. J., thermoelectric applications of semiconductors, **145**; thermal conductivity of Bi_2Te_3, **2449**
Goldstein, L., with J. M. Anderson, interaction of e.m. waves in plasma, **1383**; collision cross-section of He for slow electrons, **3351**
Goldstein, M., and E. R. Michalik, scattering of light by inhomogeneous solid, **1353**
Goldstein, S. J., Jr, comparison of radiometer circuits, **535**
Goldwater, D. L., effects of electrolysis in theria emitter, **2587**
Golikova, O. A., with others, photoconductivity and luminescence of CdS(Cu), **3750**
Göllnitz, H., current partition in valves, **3589**
Golosman, B. S., regenerative amplifier with distributed amplification, **2002**
Gomon, G. O., with others, X-ray investigation of solid solutions of $BaTiO_3$ $PbZrO_3$, **1436**
Goncharov, K. V., and V. A. Krasil'nikov, thermal oscillations of piezoelectric crystals, **2770**
Good, I. J., terminology in information theory, **2530**
Good, R. H., Jr, with E. L. Murphy, thermionic and field emission, **3694**
Goodenough, J. B., role of covalence in perovskite-type manganites, **1115**; domain patterns in BiMn and SiFe alloys, **3116**
Goodman, C. H. L., bond relationships in diamond-type semiconductors, **145**
Goodman, P., sensitive gold-leaf electroscope, **1161**
Goodman, R. R., with J. M. Luttinger, cyclotron resonance of holes in Ge, **1092**
Goodman, T. P., measurement of correlation coefficients, **3827**
Goodrich, H. C., transistorized sync separator circuits, **1565**
Goodsman, R. F., design of broadcasting studios, **1295**
Goody, R. M., and W. T. Roach, distribution of ozone from emission spectra, **3726**
—— with C. D. Walshaw, investigation of ozone band in solar spectrum, **3725**
Göransson, K., and L. Hansson, subharmonic oscillations in nonlinear system, **2977**
Gordon, E. S., D. C. Maxwell, Jr, and N. E. Alexander, aerosoloscope counts particles in gas, **1836**
Gordon, J. P., variable gas-dielectric capacitor, **998**
Gordon, J. P., H. J. Zeiger and C. H. Townes, the maser, **403**
Gordon, W. E., simple picture of tropospheric scattering, **3185**
Gordon-Smith, G. W., with J. S. Preston, discontinuities in saturation curves of photocells, **609**
Gordy, W., and others, 3-mm-λ radiation from sun, **740**
—— with C. A. Burrus, mm and sub-mm λ spectroscopy, **2156**
—— with others, superconductivity at mm λ, **1356**
Gore, E. M., film pickup for TV, **280**
Gorelik, A. G., and V. A. Zverev, interaction of sound waves, **1939**
Gornyi, N. B., inelastic reflection of electrons, **3029**; structure of surface of Cu_2O films, **3106**
Gorodetski, A. B., magnetic-amplifier circuits with internal feedback, **3012**
Gorter, E. W., properties of ferrites in connection with their chemistry, **830**
Gorton, H. C., T. S. Shilliday and F. K. Eggleston, high-temperature TiO, rectifiers, **1218**
Goryunova, N. A., and N. N. Fedorova, isomorphism of compounds of type $A^{III}B^{V}$, **2096**; ternary semiconducting systems, **3417**
—— and others, photoelectric properties of compounds with zinc-blende structure, **2779**
—— with B. T. Kolomiets, ternary semiconducting systems, **1751**
Gossard, E. E., with L. J. Anderson, prediction of oceanic duct propagation, **2876**
Gossick, B. R., transient behaviour, of semiconductor rectifiers, **1236**, of p-n junctions, **1574**
Gosslau, K., and W. Guber, high-slope multigrid valve and its applications, **3262**
—— and H. J. Harloff, characteristics of bi-stable multivibrators, **1006**
Gott, E., high-speed counter uses surface-barrier transistor, **1656**
Götze, S., with E. G. Schlosser, d.c. amplifier with asymmetrically earthed input, **2004**
Goublin, R., long-range dm-λ links, **1197**
Gougeon, J., with R. Servant, birefringence of paper at 9·35 kMc/s, **3140**
Gould, J. E., and M. McCaig, production of anisotropy in permanent magnet, **828**
Gourash, F., low-level magnetic amplifier, **365**
Goussot, L., television equipment at R.T.F., **3556**
Gozhenko, N. A., and Yu. M. Altaiski, resistance of metal/semiconductor contact, **3441**
Gozzini, A., with others, interaction of cm waves with plasma, **1691**
Grabke, H., optical compensation by rotating prisms in film scanners, **1227**
—— with F. Below, influence of optical system on television picture, **1233**
Graf, L., with others, starting of gas discharge in a.c. field, **3338**
Graham, B., with J. B. Meikle, electrons produce high-temperature dielectric, **2464**
Granger, S. H., Independent Television network, **2555**
Gränicher, H., and others, dielectric properties of ice, **377**
Granier, J., and N. Astoin, absorption spectrum of NO in far ultraviolet, **2347**
Granville, J. W., junction transistor with high current gain, **3565**
Graves, C. D., radar polarization power scattering matrix, **1425**, **(D) 2399**
Gray, G. W., toroidal transformers pass video bandwidths, **2311**
Greatbatch, W., and W. Hirtreiter, Ge-transistor amplifiers stable to 95°C, **705**
Green, E., ladder networks, synthesis of, **42**, design data for, **3296**
Green, W. B., conduction and breakdown in hexane, **846**
Greenberg, H., with others, multiple-frequency-shift teletype systems, **564**
Greene, J. G., with W. D. White, noise temperature of gas-discharge noise generators, **3146**
Greene, R. F., with R. L. Longini, ionization interaction between impurities in semiconductors, **3409**
Greenspan, M., and C. E. Tschiegg, speed of sound in water with dissolved air, **2935**
—— C. E. Tschiegg and F. Breckenridge, temperature coefficient of speed of sound in water, **2934**
Gregersen, S., Copenhagen-Thorshavn radiotelephony link, **3217**
Gregory, J. W. G., with others, extraction of beam from Liverpool synchrocyclotron, **873**
Greiner, C., magnetization-reversal centres in Fe-Ni wires, **179**
Greiner, J., field strength in magnetic reproducing head, **2611**
Gremmelmaier, R., GaAs photo-element, **2250**
Grenet, G., conductivity of ionosphere and a.f. geomagnetic disturbances, **1718**
Grenier, C., superconductivity and magnetostriction, **1041**
Grensted, P. E. W., frequency-response analysis of nonlinear systems, **56**
Gribov, V. N., with L. E. Gurevich, dielectric losses in ionic dielectrics, **2767**
Griese, H. J., television transmissions without synchronization levels, **1222**; multiple-pulse-time modulation, **2214**
—— and E. Haberkant, instruments for field-strength measurements, **2853**
Griffiths, J. W. R., visual detectability of signals in noise, **2400**
—— with D. G. Tucker, detection of pulse signals in noise, **129**
Grigor'eva, V. S., with others, photoelectric properties of compounds with zinc-blende structure, **2779**
Grillot, E., preparation of CdS single crystals, **2145**
Grimmond, W., and W. H. P. Leslie, batching and counting using decade tubes, **1981**
Grinberg, G. A., transient processes in electronic devices, **3571**
—— and others, e.m. field of linear radiator inside parabolic reflector, **3650**
Grivet, P., M. Y. Bernard and A. Septier, Optique électronique I: Lentilles électroniques, **(B)3507**
Groendijk, H., and K. S. Knol, noise of valves and transistors, **616**
—— with others, noise factor of four-terminal networks, **691**
Groetzinger, G., with J. Aron, photomagnetoelectric effect in Ge, **1449**
Groll, H., and G. Pusch, cavity-resonator frequency meter, **219**
—— with H. Meinke, transmission of radar displays, **3744**
Groschwitz, E., temperature coefficient of junction transistors, **295**; ionization by collision in Si and Ge, **2436**
—— with R. Wiesner, temperature dependence of photocurrent in Ge p-n junctions, **1097**
Grosjean, C. C., theory of terminated iris-loaded guides, **19**
Gross, B., linear systems, **2650**
Gross, E. F., excitation spectrum of excitons in solid, **3104**
Gross, E. P., and M. Krook, collision processes in gases, **3345**
Gross, F., dielectric constant of insulating materials in the 4-kMc/s range, **3139**
Gross, J., tuned circuits containing negative resistance, **3303**
Grosskopf, I., measurements on receiving aerials, **668**
Grosskopf, J., K. H. Kappelhoff and G. Kopte, statistical distribution of random electrical processes, **2166**
Grossner, N. R., transformer for 'zero-impedance' amplifier, **2643**
Grosvalet, J., measurement of surface recombination velocities, **3088**
Groszkowski, J., stability of LC oscillators, **2337**
Groubert, E., with P. Caillon, effects of pressure on dielectric constants of liquids, **2769**
Groves, G. V., upper-atmosphere wind and sonic velocity determination, **2046**; determining upper-atmosphere properties by sound propagation, **2721**
Gruen, W. J., colour subcarrier synchronization problem, **3550**
Grümm, H., knife-edge method to determine aberrations of electron beams, **1677**; e.s. fields permitting calculation of electron paths, **3167**; aperture aberration in magnetic electron lenses, **3172**

Grunberg, L., and K. H. R. Wright, structure of abraded metal surfaces, **1028**
Grund, A., with others, MnO_2 as depolarizer, **1219, 1872**
Grundy, E., and H. McG. Ross, design and applications of digital computers, **1630**
Grusauskas, P., with D. K. Cheng, aperture phase errors in microwave reflectors, **332**
Guarracino, O., low pass filters for metre waves, **3298**
Gubbins, T. F., with others, high-power demountable klystron for X band, **944**
Guber, W., and W. Stetter, optical method for determining grid-cathode spacing, **2569**
—— with K. Gunslan, high-slope multigrid valve and its applications, **3262**
Guckenburg, W., magnetization of magnetic tape, **2612**
Gudmundsen, R. A., and others, recent developments in Si fusion transistors, **926**
—— with others, photoelectric mixing of incoherent light, **710**
Guénard, P., and O. Doehler, E and C type travelling wave devices, **1590**
Guérin de Montgareuil, P., with others, analysis of impurities in gases, **3349**
Guernsey, J. P., multiple tuning in television aerials, **1307**
Guertler, R., h.f. filters and tuning of a.m. transmitters, **922**
Guest, J., solution of simultaneous equations **1799**
Guggenbühl, W., and M. J. O. Strutt, spontaneous fluctuations in semiconductor barrier layers **1894**
Guillaud, C., and M. Paulus, permeability and grain size of Mn-Zn ferrites, **3122**
—— and G. Villers, effect of substituting Al^{3+} ions for Fe^{3+} ions on magnetic properties of compounds, **3451**
—— M. Paulus and R. Vautier, reduction of eddy-current losses in ferrites, **3457**
—— B. Zega and G. Villers, influence of alkali ions on Mn-Zn ferrites, **3121**
Guillien, R., diagram for impedance transformations, **1613**; line corrections in permittivity measurements, **2477**
Guiot-Guillain, G., structure of La, Pr and Sm ferrites, **2128**
—— and N. Waché, analysis of Sm ferrite, **184**
Guldner, W. G., with others, excess Ba in oxide cathodes, **301**
Gulick, E. C., with L. J. Bobb, e.s. loudspeaker, **316**
Gumlich, H. E., quenching and sensitizing effects of electric fields, **2760**
—— with others, effect of electric fields on X-ray excited phosphors, **2081**
Gunn, E. E., with N. H. Langton, field of dielectric heating work circuit, **3843**
Gunn, J. B., field dependence of electron mobility in Ge, **3782**
—— with D. C. Avery, modulated light spot in semiconductor measurements, **1081**
Gunn, J. C., theory of radiation, **2011**
Güntherschulze, A., pulse-controlled cathode sputtering and electron emission, **385**
Gupta, B. K., A. M. Mani and S. P. Venkiteshwaran, radar observations of rain at Poona, **127**
Gurevich, A. V., velocity-distribution function of electrons, **724**
Gurevich, L. E., and V. N. Gribov, dielectric losses in ionic dielectrics, **2767**
Guro, G. M., with E. I. Adirovich, times of electronic processes in semiconductors, **3414**
Gurov, V. V., and others, electronic analogue apparatus of U.S.S.R. Academy of Sciences, **2636**
Gurvich, E. I., and L. Kondorski, relation of magnetic characteristics to thickness of lamination, **1133**
Gusev, A. A., quantum theory of magnetostriction, **1040**
Guseva, L. G., with others, characteristics of discharge at positive probe, **2686**
Gutkin, L. S., interaction of signal and noise in inertial detector, **3202**
Gutmann, F., with G. S. Buchanan, linearity of electrolytic impedances, **3812**
Güttinger, P., nonlinear cross talk in multicarrier systems, **2219**
Gyorgy, E. M., with others, solid-state detector for low-energy ions **2181**

H

Haake, C. H., frequency dependence of electroluminescence, **2082**
Haantjes, J., and K. Teer, compatible colour television, **1224**
ter Haar, D., transport properties of metals and semiconductors, **2420**
—— and A. Neaves, thermal conductivity and thermoelectric power of semiconductors, **3771**
Haas, G. A., and E. A. Coomes, Schottky effect for SrO films on Mo, **1261**
Haas, P. H., with others, re-entrant cavity for measurement of complex permeability, **2848**
Haberkant, E., with H. J. Grieve, instruments for field-strength measurements, **2853**
Haberstroh, G., characteristic energy losses, **3342**
Haddenhorst, H. G., transmission of e.m. waves through inhomogeneous layers, **1035**
Hadley, L. N., with J. H. Apfel, exciton absorption in Cu_2O, **1769**
Haefer, R., measurement of low gas pressures by means of gas discharge in magnetic field, **848**; verification of theory of field emission, **2359**
Hagelbarger, D. W., with W. G. Pfann, e.m. suspension of molten zone, **1775**
—— with C. E. Shannon, concavity of resistance functions, **1635**
Hagene, M., with others, low-temperature study of ferroelectric phosphates and arsenates, **1738**
Hagiwara, S., with others, observation of nuclear resonances with coaxial-cavity spectrometer, **1696**
Hahn, D., and F. W. Seemann, temperature dependence of brightness waves in electroluminescence, **2761**
—— with others, brightness waves in luminescence of phosphors, **137**
Hahn, E. L., with others, spin-echo storage, **1038**
Hähnlein, A., semiconductor solar-energy converters, **3538**
Hall, B. I. H., diffusion of electrons in gas, **1673**
Hall, D. L., saturated diodes, **(D)1596**
Hall, J. F., Jr., and W. F. C. Ferguson, optical properties of CdS and ZnS, **1062**
Hall, W. G., with others, electron physics tables, **2682**
Hall, W. M., prediction of pulse radar performance, **1427**
Halliday, J. S., with others, stereoscopic reflection electron microscopy, **3170**
Hallows, R. W., wafer cells, **2888**
Halperin, A., and G. F. J. Garlick, absorption spectrum of CdS, **774**
Halsted, R. E., photoluminescent modulation in ZnS phosphors, **777**
Hamilton, E. L., and others, acoustic properties of shallow-water sediments, **1930**
Hamilton, T. D. S., and G. T. Wright, transit-time spread in electron multipliers, **2247**
Hammond, P., screening effect of iron tubes, **2367**
Hamoir, W., test equipment for Belgian television transmitters, **590**
Handelman, G., with H. Cohen, vibrations of plate with added mass, **2930**
Haney, D. W., calculating noise level in radar receivers, **3828**
Hannam, H. J., with others, flicker noise in secondary-emission tubes and multiplier phototubes, **3587**
Hannemann, H., and H. Pirchatzek, carrier-frequency installations, **2218**
Hansen, J., and I. L. Nielsen, Copenhagen television station, **1569**
Hansford, I. V., with K. E. Wood, flutter computer with low-gain amplifiers, **335**
Hanson, A. W., and A. Menarry, electronic presentation of optical diffraction patterns, **2180**
Hanson, G. H., shot noise in p-n-p transistors, **1246**
Hansson, L., with K. Göransson, subharmonic oscillations in nonlinear system, **2977**
Han-Ying Ku, See Ku, Han-Ying.
Harada, K., with others, time-signal generator using decade tubes, **1657**
Harada, R. H., and H. T. Minden, photosensitization of PbS films, **3751**
Harang, L., height distribution of auroral emissions, **3739**
—— with A. Omholt, lifetime of ^1S state of oxygen atom in atmosphere, **1053**
Hardy, D. R., B. Jackson and R. Feinberg, recording high-speed single-stroke transients, **1494**
Hargens, C. W., wireless sound systems, **2278**
Hariharan, P., and M. S. Bhalla, logarithmic megohmmeter, **3152**
Harkness, S., with F. J. Wilkins, electronic supply for calibration of instruments, **1554**
Harloff, H. J., with K. Gunslan, characteristics of bistable multivibrators, **1006**
Harman, T. C., segregation of impurities in InSb, **2808**
Harman, W. A., with D. A. Dunn, experimental transverse current travelling-wave valve, **3253**
—— with others, transverse-current travelling-wave valve, **3252**
Harnik, E., with others, carrier-defect phenomena in Ge, **1096**; recombination on Ge surfaces, **2442**
Harnischmacher, E., with others, observations of ionospheric movements, **755**
Harper, P. G., motion of conduction electrons in magnetic field, **380**, application to diamagnetism, **381**
Harper, W. R., charging of quartz surfaces, **447**
Harpur, W. W., and A. R. Ubbelohde, conductance mechanisms in CsCl, **1103**
Harrick, N. J., infrared absorption and surface recombination velocity in Ge, **2109**
Harries, J. H. O., rubber membrane and resistance-paper analogies, **1492**
Harrington, R. D., R. C. Powell and P. H. Haas, re-entrant cavity for measurement of complex permeability, **2848**
Harris, C. M., acoustical properties of carpet, **1294**
Harris, D. J., and P. O. Hawkins, use of krypton-85 in measuring gas clean-up rates, **1733**
Harris, I. A., coaxial resistor mounts for 0-4 kMc/s, **2313**
Harris, K. E., secondary surveillance radar systems, **3388**
Harris, V., and M. M. Tall, prediction of electronic equipment reliability, **1926**
Harrison, A. E., with R. E. Wall, Jr, broad-band microwave frequency spectrum, **1806**
Harrison, W. A., mobility in Zn blende and InSb, **2116**
Harrison, W. N., with others, resistivity of vitreous ternary lead silicates, **2827**
Harrower, G. A., measurement of electron energies, **850**; Auger emission of secondary electrons, **3028**
Hart, A., with L. F. Bates, magnetization curves and domain structure, **3450**
Härtel, W., writing speed of light-beam oscillographs, **530**; accuracy of estimation of oscillograms, **531**
Harten, H. U., and W. Schultz, barrier layer photoelectric effect in Ge, **614**
Hartke, D., with A. S. Bagley, precision frequency-measuring system, **524**
Hartley, M. S., ultrasonic machining, **1170**
Hartshorn, L., and J. J. Denton, calibration of inductance standards, **3134**
Hartz, T. R., radio star scintillations and ionosphere, **422**
Harvey, J. A., movement of sporadic-E ionization, **1710**
Harvey, R. V., G. F. Newell and J. G. Spencer, v.h.f./u.h.f. field-strength recording receiver, **3528**
Harwood, H. D., with D. E. L. Shorter, ribbon type pressure-gradient microphone, **1607**
Hasegawa, H., with P. W. Anderson, considerations on double exchange, **1117**
Haselgrove, J., ray theory and method for ray tracing, **755**
Hashimoto, T., and A. Yokoyama, decrease of grid emission by improvement of electroplating, **632**
Hashizume, S., with others, geomagnetic variations during solar eclipse, **2045**
Hasley, A. D., with others, magnetic pulse modulators, **36**
Hasselbeck, W., stability and accuracy of s.w. receiver E104, **556**; extendible receiver installations for telegraphy, **1536**
Hastings, C., Jr, Approximations for Digital Computers, **(B)675**
Hastings, J. M., and L. M. Corliss, antiferromagnetic transition in Zn ferrite, **3800**
Hatanaka, T., and others, solar enhanced region at 6300 Å from eclipse observations, **2043**
Hatton, G. H. T., series electronic voltage regulator, **575**
Hauer, P., and G. Keck, rendering ultrasonic waves visible, **963**
Hauge, O., with others, r.f. observations of solar eclipse 30th June 1954, **3719**
Haus, H. A., with F. N. H. Robinson, analysis of noise in electron beams, **1593**
Havens, R. J., H. Friedman and L. O. Hulbert, ionospheric F_2 region, **755**
Hawes, F. C., with W. K. Clothier, differential amplifier for low-frequency bridges, **3150**
Hawkes, H. D., and A. H. M. Arnold, wattmeters, **1168**
Hawkins, G. S., radar echoes from meteor trails, **3717**
—— and A. F. Cook, recombination as source of light from meteor trains, **3362**
Hawkins, P. O., with D. J. Harris, use of krypton-85 in measuring gas clean-up rates, **1733**
—— with others, keep-alive instabilities in t.r. switch, **2251**
Hawkins, T. H., with T. S. Moss, recombination radiation from InSb, **2807**
Hawkins, W. R., with others, reproducing equipment for fine-groove records, **2279**
Haworth, F. E., with W. S. Boyle, glow-to-arc transition, **2356**
Hayakawa, S., and N. Hokkyo, e.m. radiation from electron plasma, **3706**
Hayasaka, T., K. Matsuzawa and M. Suzuki, stabilization of Type MR-103 capacitor microphone, **2276**
—— and others, application of titanium to acoustic instruments, **3810**
Hayashi, I., with others, magnetic resonance in α-Fe_2O_3, **486**
Hayden, J. D., silicone insulants, **1476**
Haydon, S. C., with others, pre breakdown ionization currents in hydrogen, **1023**
Hayes, R. E., with others, transistor digital fast multiplier, **1631**
Hayes, W. A., synthesizing crystal stability, **57**
Haynes, J. R., and J. A. Hornbeck, trapping of minority carriers, in n-type Si, **1087**
—— and W. C. Westphal, recombination radiation from Si, **2789**
Hayward, C., with T. H. Kinman, crystal cutting, **1441**
Hazzaa, I. B., with R. N. Sedra, effect of solar flares on ionosphere, **423**
Head, J. W., with C. G. Mayo, impedance concept, **2309**
Heading, J., reflection of long waves from ionosphere, **546**
Headrick, L. B., with others, improvements in Type 21AXP22 colour kinescope, **3554**
Heaps, H. S., reflection of sound from sinusoidal surface, **5**; effect of noise on detection of random signal, **904**; reflection from surface of non-uniform impedance, **3601**
Heartz, R., and H. O. Buttemann, Jr, perpendicularly superposed magnetic fields, **339**
Heaton, H. T., preventing fires from radio and television receivers, **3205**
Hechtel, R., electrodes for Pierce-type electron guns, **1910**; modern reflex klystrons, **3574**
Heck, L., and F. Bürck, sound transformations in broadcasting studio technique, **2948**
Hector, F. S., with J. H. Meek, recording magnetic variometer, **105**
Hedgcock, F. T., magnetic susceptibility of n-type Ge, **2107**
Hedge, L. B., cascode a.f. amplifier, **2343**
Hedlund, D. C., L. C. Edwards and W. A. Whitcraft, Jr, ionospheric scatter techniques, **3185**
van Heerden, I. J., and T. Thambyahpillai, 27-day recurrence tendency of cosmic-ray intensity, **1045**
—— with M. Pessemier, variation of cosmic ray intensity near 1954 sunspot minimum, **2712**
Heffner, J. B., with P. M. Toscano, c.r. tube power supply uses transistor oscillator, **3887**
Heggs, P., analogue computers, **2635**
Heidenreich, R. D., with others, Co ferrite heat-treated in magnetic field, **1788**
Heidester, R., and E. Henze, improvement of reception by diversity, **2881**
Heikes, R. R., magnetic transformation in MnBi, **171**; relation of magnetic structure to conductivity in NiO, **462**
Heiland, G., conductivity of ZnO crystals, **1105**
Heilmann, A., broadside and end-fire radiators with continuous illumination, **1960**
Heilpern, W., cascade generators for particle acceleration up to 4 MeV, **1506**
Heimann, W., inertia effects in the vidicon, **2552**
Heinz, O., E. M. Gyorgy and R. S. Ohl, solid-state detector for low-energy ions, **2181**
Helaine, A., with J. Bouchard, ionospheric propagation of decametre waves, **1853**
Helliwell, R. A., and others, the 'nose' whistler, **2393**
—— with others, Stanford-Seattle whistler observations, **2392**
Hellwig, G., motion of charged particles in magnetic field, **2704**
Helmcke, J. G., theory and technique of electron-microscope stereograms, **1183**
—— and H. J. Orthmann, theory and technique of electron-microscope stereograms, **1183**
Helmis, G., optical transitions of impurity-centre electrons, **3770**
Helstrom, C. W., with others, post-deflection focus colour kinescope, **3894**
Hemingway, A. V., with others, tridac analogue computer, **2300**
Hemmenway, K. N., balanced unregulated power supply, **3537**
Henderson, C. L., with D. W. G. Chappell, horizontal velocity of ionospheric movements, **2387**
Henderson, J. T., and M. Romanowski, standard of mutual inductance, **1830**
Henisch, H. K., and J. Zucker, estimation of resistivity and lifetime of semiconductors, **3824**
Henle, R. A., multistable transistor circuit, **37**
Henry, R. P., stabilized power supply for ionization gauge, **2750**; determination of pressure using ionization gauge, **3391**
Henry, W. E., and M. J. Boehm, magnetic saturation of γ-Fe_2O_3, **2451**
Henry, W. G., and J. L. Rogers, magnetic susceptibility of diamagnetic alloys, **2824**
Hensley, E. B., conduction mechanism in oxide-coated cathodes, **2585**
Henze, E., initial transients with a.m. and f.m., **45**; bandwidth and effective noise bandwidth, **903**; transformation of teleprinter alphabet, **1544**
—— with R. Heidester, improvement of reception by diversity, **2881**
Heppner, J. P., with C. Y. Johnson, night-time measurement of ion composition to 120 km, **1409**
Herbert, R. A., with others, electroluminescence of GaP, **1433**
Herbstreit, J. W., and M. C. Thompson, phase measurements over transmission paths with atmospheric turbulence, **234**
Hercock, R. J., and D. M. Neale, shutter tester using photoelectric integrator, **889**
Herd, G. R., with others, definition of terms in study of reliability, **2596**
Herlet, A., current density of p-n-n rectifier, **598**
—— and H. Patalong, blocking properties of junction rectifiers, **2901**
Herman, F., energy-band structure of zinc-blende-type crystals, **145**; band structure of Si and Ge, **806**
Hernqvist, K. G., plasma oscillations in electron beams, **289**
Herrey, E. M. J., experimental studies on acoustic radiation pressure, **648**
Herring, C., and E. Vogt, theory for many-valley semiconductors with anisotropic scattering, **2423**
Hers, J., unit of frequency, **1481**
Herscovici, S., with L. Thouvel, design of radomes, **1965**
Hersh, J. F., with F. V. Hunt, wide-range logarithmic voltmeter, **856**
Hershfield, W. N., multiprogram f.m. broadcast system, **3215**
Hertz, C. H., continuously controllable gas discharge, **2927**
Hervé, J., improvement of stabilized Pound oscillator, **355**
Herz, R., quadripoles for frequency compensation of aerial impedance **2991**
Hess, A., with others, design of r.f. permeameter, **3482**
Hess, V. P., V. J. Kunelbach and H. A. Miranda, Jr, α-ray emission from earth's surface, **3370**
Hesselbach, H., devating aerials for television, **3641**
Hessler, J., with others, distribution of auroras in Alaska, **1722**
Hetland, G., Jr, and R. R. Buss, low-ripple regulated power supply, **572**
Heuvelman, C. J., and A. van Weel, group-delay measurements, **2482**
Hey, J. S., and S. J. Parsons, radar measurement of low elevation angles, **2746**
Heynick, L. N., R. J. Wehl and D. H. Andrews, cathode-ray recorder, **2263**
Heywang, H., impedance of wound capacitors, **1982**
Heywang, W., and R. Schofer, influence of structure on hysteresis of $BaTiO_3$, **3758**
Hibberd, F. H., observation of ionospheric self-interaction, **2198**
Hibberd, R. G., with others, Ge and Si power rectifiers, **2885**
Hickman, J. S., with G. E. Martin, directional properties of plane radiators with binomial shading, **1281**
Hickmott, J., Jr, with others, signal/noise ratios of photoconductive detectors, **2565**
Hiedemann, E. A., with A. P. Lasher, investigation of ultrasonic waves by light refraction, **1941**
Higa, W. H., nonlinear coupling in ferroelectric device, **3671**
Higashimura, M., with others, amplitude probability distribution of atmospheric noise, **3135**
Hilbourne, R. A., and D. D. Jones, transistor power amplifiers, **366**
Hildreth, D. E., crystal filter, **693**
Hill, E. L., shielding by conductive coatings, **1520**
Hill, G. W., and T. Pearcey, starting routines for C.S.I.R.O. computer, **669**
Hilsum, C., absorption edge of amorphous Se, **3423**
—— D. J. Oliver and G. Rickayzen, photoelectromagnetic effect in InSb, **145**
Hines, C. O., hydromagnetic resonance in ionospheric waves, **111**; variations in number of shower meteors detected by forward scattering, **738**; electron resonance in ionospheric waves, **3372**
—— and others, dependence of meteoric forward-scattering on aerial patterns, **1198**
—— with others, variations in number of shower meteors detected by forward scattering, **1046**
Hines, M. E., M. Chinney and J. A. McCarthy, digital memory in barrier grid storage tubes, **1262**
—— G. W. Hoffman and J. A. Saboon, positive ion drainage in electron beams, **623**
Hirai, M., with others, diffraction effect of mountains for v.h.f. radio communication, **1859**
Hirao, K., and H. Maruyama, instruments for observation of v.h.f. fading, **854**
Hirono, M., and H. Maeda, distortion of F_2 region on magnetic equator, **424**
—— with others, geomagnetic distortion in ionosphere, **425**
Hirsch, G. J., N.T.S.C. colour television, **2545**; television relay, **3543**
Hirsh, I. J., with R. C. Bilger, masking of tones by bands of noise, **3611**
Hirst, W., with others, stereoscopic reflection electron microscope, **3170**
Hirtreiter, W., with W. Greatbatch, Ge transistor amplifiers stable to 95°C, **705**
Hitchcox, G., resistance measurement using electronic techniques, **3151**; valve voltmeter and its uses, **3832**
Ho, K. C., design of triode gun, **1257**
Hodgkinson, R. J., stoichiometry of intermetallic semiconductors, **3412**
Hodgson, A. D., and G. M. B. Wills, microwave system in Canada, **2890**
Hoffman, G. R., coplanar-mesh storage, **2923**
Hoffman, G. W., with others, positive ion drawings in electron beams, **623**
Hoffman, L. C., and W. O. Statton, structure in vitreous silicates, **190**
Hoffman, W. C., high-frequency back-scatter from sea surface, **1199**; scattering of e.m. waves from random surface, **1382**
Hoffmann, H. integrating equipment [differential analysers], **2302**
Hoffmann, J. C., influence of alternating voltage and direct voltage on nonlinear capacitor, **2649**
Hoffmann, O., transmission of electrons by Al_2O_3 films, **1365**
Hoffmeister, C., electrophysical determination of meteor velocities, **409**
Hofman, D., with D. de Nobel, dielectric constant of CdTe, **3790**
Hofmann, R., and W. Walcher, calculation of time functions for broken rational transform functions, **1151**
Hogarth, C. A, and W. Bardsley, effect of illumination on noise of Si filaments, **1089**
Hogg, D., atmospheric-noise levels in Africa, **2740**
Hogg, D. C., with A. B. Crawford, atmospheric attenuation at mm λ, **3862**
Hojo, H., multiple scattering by irregular medium, **2192**
Hok, G., noise factor of travelling-wave valves, **3579**
—— with J. E. Rowe, backward waves, **3577**
Hokkyo, N., with S. Hayakawa, e.m. radiation from electron plasma, **3706**

Holden, A. N., and others, guanidine aluminum sulphate hexahydrate, **2415**; new low-temperature ferromagnets, **3804**
Hollis, J. L., avoiding grid current in class B modulators, **1571**
Hollmann, H. E., applications for tandem transistors, **3001**
Hollway, D. L., electrolytic-tank equipment, **1820**; tracing electron trajectories in crossed fields, **1821**
—— with C. T. Murray, equipment for solving field problems, **1819**
Holmes, D. K., with others, effects of gamma radiation on Ge, **3438**
Holmes, P. J., X-ray camera for detection of crystal imperfections, **840**
—— with E. Billig, growth and etching of crystals with diamond structure, **156**
Holmes, P. L., with others, photomultiplier pulse durations and shapes, **298**
Holonyak, N., with others, *p-n-p-n* transistor switches, **3899**
Holt, F. S., with others, double-parabolic-cylinder aerial, **985**
Holzer, R. E., and O. E. Deal, low-a.f. e.m. signals of natural origin, **2070**
Homilius, K., a.f. phase-angle meters using transistors, **1167**
Honig, A., and J. Combrisson, paramagnetic resonance in As-doped Si, **3425**
—— with others, microwave application of electron spin resonance, **3032**
Honma, T., with N. Sawazaki, microwave repeater system using travelling-wave valves, **1212**
Honnell, P. M., prescribed-function vibration generator, **2501**
—— and R. E. Hira, matrices in analogue machines, **672**
van den Hoogenband, J. C., and J. Stolk, impedance measurements by long line, **1158**
Hoogenstraaten, W., with G. Diemer, hole mobility in CdS, **3791**
Hooker, P. M., with L. H. Light, transistor d.c. converters, **573**
de Hoop, A. T., integrals in diffraction problems, **1379**; variational formulation of diffraction problems, **1378**
Hooper, A. H., abnormal v.h.f. propagation, **2517**
Hooper, D. E., and A. E. Jackets, *RC* oscillators using junction transistors, **3308**
Hoover, M. V., with W. N. Parker, gas tubes protect transmitters, **1235**
Hopkins, H. G., d.f. plotting aid, **2743**
Hopkins, R. L., and E. N. Clarke, thermal acceptors in Ge, **1765**
Hopmann, W., with H. Billing, micro-program control mechanism, **1629**
Hopwood, W., with others, mechanism of breakdown in hydrogen, **387**
Horie, T., and others, thermal transition of transparency in $BaTiO_3$, **453**
Horlock, B. A., with others, underwater television camera, **1226**
Horn, R. E., with P. M. Honnell, matrices in analogue machines, **672**
Hornbeck, J. A., with J. R. Haynes, trapping of minority carriers in *n*-type Si, **1087**
Horner, F., and C. Clarke, waveforms of atmospherics and location of thunderstorms, **122**
Horowitz, G., with others, circuit element using magnetoresistive effect, **1319**
Horton, C. W., Gram-Charlier series to represent noise, **2677**
Horton, J. W., with others, spin-echo storage, **1038**
Hosler, W. R., with others, properties of Mg_2Sn, **1104**
Hotston, E. S., and J. E. Houldin, measurement of dielectric constant, **1815**
Houldin, J. E., with E. S. Hotston, measurement of dielectric constant, **1815**
Houlgate, H. J., with others, reproducing equipment for fine-groove records, **2279**
House, A. S., and K. N. Stevens, testing description of vowel articulation, **653**
House, H., with M. J. Morant, work function and patch field of metal surface, **2023**
Hove, J. E., magnetic susceptibility of graphite, **1113**
Howe, H. H., with J. R. Wait, ground-wave propagation at 200 c/s–500 kc/s, **3516**
Howitt, G., with others, colour-television-receiver design, **1881**
Howland, R. E., with E. D. Fitton, line transmission circuits, **2614**
Hoyaux, M., with others, plasmograph for studying electric discharges, **532**
Hrostowski, H. J., and others, Hall effect and conductivity of InSb, **1772**
Hsieh, C. L., 45 MeV linear accelerator, **879**
Hsu, Chih Chi, trigger circuit of signal-seeking radio using 'difference voltage', **555**
Hubbard, J., electronic interactions in solids, **1017**
Huber, O., with E. Deeg, dm-λ dielectric behaviour of clays, **450**
Hübner, R., industrial generators for r.f. heating, **1174**
Huerta, A. Fernandez. See Fernandez Huerta, A.
Hughes, C. J., signalling systems for submarine telegraph circuits **563**
Hughes, D. S., and J. M. Kennel, elastic-wave velocity in fused quartz and armco, **1131**
Hughes, R. C., with P. P. Coppola, pressed dispenser cathode, **1916**
Hughes, V. A., calibration of noise source for S band, **3829**
Hühn, C. F., c.r. tube factory at Ulm, **1927**
Hulbert, E. O., with others, ionospheric F_2 region, **755**
Hulme, V. B., 16-mm telerecording system, **919**
Humbach, W., radiation damping in particle accelerators, **872**; alignment of strong-focusing synchrotron, **875**
Humby, A. M., and C. M. Minnis, asymmetry in performance of radio-telegraph circuits, **3208**
Humphreys, J. R., mobile radio development, **3884**
Hunaerts, J., and M. Nicolet, ionospheric results during eclipses, **1412**
Hunt, A. L., with P. A. Anderson, work function of Pb, **3112**
Hunt, F. V., exact equations for propagation of sound in fluids, **1276**
—— and J. F. Hersh, wide-range logarithmic voltmeter, **856**
Hunten, D. M., F. E. Roach and J. W. Chamberlain, photometric unit for airglow and aurora, **3043**
Hunter, R. S., photoelectric colorimeters for television tubes, **1229**
Huntington, H. B., and R. D. Southwick, ultrasonic velocities in $BaTiO_3$ ceramics, **144**
Hurd, R. A., end-fire arrays of magnetic line sources, **3642**
Hurley, R. B., design of transistor amplifiers, **367**
Huruhata, M., H. Tanabe and T. Nakamura, photoelectric studies of night sky light, **1714**
Hutson, A. R., effect of water vapour on Ge surface potential, **3097**
Huxley, L. G. H., interpretation of measurements of radio-wave interaction, **2197**; energy losses of electrons in diatomic gases, **2688**
Hyde, F. J., impedance of thermistor at low frequencies, **678**; excess noise spectra in Ge, **2445**; noise spectra of Ge *p-n* diode, **2558**
Hyder, H. R., voltmeter amplifier, **3485**
Hyman, R. A., and D. H. Tomlin, fixation of iodine in Se, **802**
Hynes, R. W., with others, triode analogue computer, **2300**

I

Iandelli, A., covalent alloys PrGe and CaGe, **1796**
Ibuki, S., and S. Yoshimatsu, photoconductivity of stibnite, **479**
—— with others, influence of infrared rays on photoconductivity of CdS, **130**
Ichida, T., with others, time-signal generator using decade tubes, **1657**
Ida, I., with others, 40–80 Mc/s overtone quartz units, **2330**
Igarashi, Y., with others, dissociation of BaO under electron bombardment, **3260**
Iida, S., H. Sekiguwa and Y. Aiyama, uniaxial anisotropy in Fe-Co ferrites, **1467**
Iijima, S., with others, photocurrent of CdS in magnetic field, **2756**
Ikeda, M., with others, studies on diffracted waves from a mountain, **898**
Ikornikova, N. Yu., with V. P. Butuzov, liquid inclusions in artificial quartz, **841**
Illovici, A., Giorgi units, **3327**
Il'yushenko, V. L., with A. I. Drokin, temperature dependence of magnetization of Ni, **2131**
Ince, A. N., and C. W. Oatley, properties of electroluminescent phosphors, **782**
Indjoudjian, M. D., and J. Oswald, sampling of valves for inspection, **2253**
Ingard, U., and D. C. Pridmore-Brown, radiation from acoustic boundary layer, **1935**; scattering of sound by sound, **2939**
Ingram, D. J. E., Spectroscopy at Radio and Microwave Frequencies, **(B)1393**
Inkster, W. J., with others, propagation test at 505 Mc/s and 4090 Mc/s on beyond-horizon paths, **234**
Inuishi, Y., with others, electron emission, conduction and noise of oxide-coated cathodes, **629**
Ioffe, A., semiconductor electronics, **459**
Ioffe, A. F., Poluprovodniki v Sovremennoi Fizike (Semiconductors in Contemporary Physics), **(B)1149**; thermoelectric generators, **3227**
—— and others, semiconductor thermocouples, **2430**
—— with A. V. Ioffe, thermal conductivity of semiconductors, **3090**
Ioffe, A. V., and A. F. Ioffe, thermal conductivity of semiconductors, **3090**
—— with others, semiconductor thermocouples, **2430**
Iordanishvili, E. K., with others, thermoelectric cooling, **3224**
Irani, K. B., low-pass/band-pass frequency transformation, **3299**
Irie, H., with others, transmission of microwaves over sea, **3861**
Irons, H. R., with E. O. Schonstedt, airborne magnetometer Type-2A, **104**
Ishida, T., with others, amplitude probability distribution of atmospheric noise, **3135**
Ismail, M. A. W., precise system of f.m. radar, **3746**
Isted, G. A., irregularities in E region caused by atmospheric electricity, **755**
Isupov, V. A., and others, high permittivity of niobates and tantalates, **3402**
Ittner, W. B., III, bridge and short-arc erosion of contacts, **2642**
Ivey, H. F., with G. Destriau, electroluminescence, **780**
Iwanaga, K., with others, magnetic resonance in α-Fe_2O_3, **486**
Iwase, S., experimental study of point-contact transistor, **3564**
Izhak, I. A., effect of pressure on ferroelectric ceramics, **2770**

J

Jaccard, C., with others, dielectric properties of ice, **377**
Jaccarino, V., with others, ferromagnetic resonance in Mn ferrite, **1134**
Jackets, A. E., multivibrators using junction transistors, **2340**
—— with D. E. Hooper, *RC* oscillators using junction transistors, **3308**
Jackson, B., with others, recording high-speed single-stroke transients, **1494**
Jackson, J. E., obtaining electron-density profiles from *PPI* records, **2381**
Jackson, R. W., method of revealing *p-n* junctions in Ge, **2444**
Jacob, L., with W. W. H. Clarke, anomalous emission in low-energy electron beams, **1177**
Jacobs, I. S., and C. P. Bean, elongated fine-particle magnets, **1461**
Jacobs, J., and H. Berger, large-area photoconductive X-ray pickup tube, **2864**
Jacobs, J. A. H., with E. F. MacNichol, Jr, measuring reciprocal time intervals, **1828**
Jueschke, F., value of colour carrier in European colour-television system, **1877**
Jaffe, B., R. S. Roth and S. Marzullo, properties of piezoelectric ceramics, **1073**
Jaffe, P. M., and E. Banks, oxidation states of Eu in phosphors, **1064**
Jain, S. C., with K. S. Krishnan, thermionic constants of semiconductors, **1887**
Jäkel, T., dielectric constants of liquids at dm λ, **1157**
James, D. B., with U. F. Gianola, ferromagnetic coupling between crossed coils, **3293**
James, H. M., with G. W. Lehman, interaction of impurities and mobile carriers in semiconductors, **1749**
James, J. B., with E. Franklin, application of transistors to radiation monitors, **3175**
Jamieson, G. G., with D. G. Tucker, discrimination of synchronized oscillator, **2334**
Jancel, R., and T. Kahan, Lorentz-type plasmas, statistical mechanics of, **755**, analysis of coupling of e.m. waves in, **755**; theory of plasmas, **1366**
Janeff, W., production and properties of metal nitrides, **1102**
Janes, H. B., and P. I. Wells, tropospheric scatter-propagation measurements, **234**
—— with others, fading in propagation through turbulent atmosphere, **250**
Janes, R. B., L. B. Headrick and J. Evans, improvements in Type-21AXP22 colour kinescope, **3554**
Janner, K., S. Magun and E. Schopper, Van de Graaff generator with liquid charge carrier, **915**
Jánossy, L., statistical problems of the electron multiplier, **296**
Javitz, A. E., impact of high-energy radiation on dielectrics, **3814**
Jaynes, E. T., nonlinear dielectric materials, **784**
Jean, P., with R. Bulos, relaxation oscillations in triode valve, **1652**
Jeffress, L. A., with others, localization of sound sources, **649**
Jellinek, G., E. Menzel and C. Menzel-Kopp, intergrowth of Cu and Cu_2O, **3442**
Jenkins, D. P., with D. G. Avery, measurements of diffusion length in InSb, **145**
Jenkins, R. O., with I. Brodie, impregnated cathodes containing SrO or CaO, **2918**
Jennings, J. C. E., and R. G. Pratt, numerical ray tracing in electron lenses, **76**
Jennison, R. C., and M. K. Das Gupta, angular diameter of radio sources, **1700**
Jenny, D. A., J. J. Loferski and P. Rappaport, photovoltaic effect in GaAs *p-n* junctions, **2566**
Jervis, F. R., with others, definition of terms in study of reliability, **2596**
Jesty, L. C., developments in colour television, **1876**
Jewitt, H. S., component tolerance effects in feedback i.f. amplifiers, **2003**
Jeżewski, M., and T. Piech, dielectric properties of $BaTiO_3$, **1740**
Johanson, H. M., with others, double-parabolic-cylinder aerial, **985**
Johne, A., with W. Kaule, audio-frequency spectrometer, **2174**
Johnson, C. Y., and J. P. Heppner, night-time measurement of ion composition to 120 km, **1409**
Johnson, E. O., studies of hot-cathode arcs, **1359**
Johnson, F. S., temperature distribution of ionosphere, **2380**
Johnson, H. G., with J. A. Kinosko, *long* long Vagis, **1961**
Johnson, J. C., back-scattering coefficient of mixture of ice and air, **899**
Johnson, L. J., and S. E. Rauch, magnetic-amplifier systems for servos, **3014**
Johnson, L. W., f.m. receiver design, **3865**
Johnson, M. A., with others, motion of cylindrical irregularity in ionized medium, **755**
Johnson, P. D., W. W. Piper and F. E. Williams, effect of electron traps on electroluminescence, **3755**
Johnson, P. O., with others, photoelectric mixing of incoherent light, **710**
Johnson, W. C., with M. G. Morgan, polarization of h.f. sky wave at vertical incidence, **755**
Johnston, D. L., with E. F. Dunkin, subminiature transformers and transductors, **1975**
Johnstone, C. W., with others, measurement of mμs time intervals, **2835**
Johnstone, G. G., junction-diode a.f.c. circuit, **3207**
Jona, F., with others, ferroelectricity, aspects of, **785**, in alums, **3404**
Jones, D. D., with R. A. Hilbourne, transistor power amplifiers, **366**
Jones, D. S., scattering cross-section of obstacle, **401**
Jones, E., with others, developments in vibration measurement, **225**
Jones, E. E., inductance of two elliptic tubes, **2281**; magnetostatic force on current-carrying conductors, **3347**
Jones, E. M., pulse circuits fabricate code disk, **2975**
Jones, H. Spencer, definition of second, **513**
Jones, L. M., transit-time accelerometer, **3836**
—— with others, upper-air density by falling-sphere method, **3723**
Jones, R. F., abnormal radio propagation 3rd December 1954, **247**
Jones, W. B., and others, 300 MeV electron synchrotron, **874**
Jordan, D. B., and others, multiple-frequency-shift teletype systems, **564**
Jory, F., with others, deriving geomagnetic dipole-field coordinates from cosmic-ray observations, **2371**
Jost, K. H., with J. Krumbiegel, investigations on ZnS crystals, **2759**
Jovanović, D. T., and V. N. Kostić, distributed amplifier using secondary-emission valves, **1342**
Jumau, L., recent patents on accumulators, **1873**
Juretschke, H. J., R. Landauer and J. A. Swanson, Hall effect and conductivity in porous media, **3761**
Justi, E., with others, bolometers at low temperatures, **1499**
Justice, R., and V. H. Rumsey, measurement of electric field distributions, **2843**
Juza, M., with others, balloon-borne system for tracking sun, **3844**
Juza, R., and H. Puff, ferromagnetism of Mn_4N, **3799**

K

Kách, A., interference spectra and aerial filters in directional radio systems, **2332**
Kaden, H., propagation of e.m. waves between conducting planes, **22**; compensation of interference by receiver in parallel, **3206**
Käding, H., with H. Krause, television outside-broadcast van, **1230**
Kaempffer, F. A., principle of phase invariance, **371**
Kagan, Yu. M., and V. I. Perel', theory of Langmuir probes, **1024**; mobility and space charge of ions in nonuniform field, **3335**
Kaganov, M. I., with others, galvanomagnetic phenomena in metals, **3021**
Kahan, T., electrodynamics of turbulent ionized media, **1373**
—— with R. Jancel, Lorentz-type plasmas, statistical mechanics of, **755**, analysis of coupling of e.m. waves in, **755**; theory of plasmas, **1366**
—— with others, interaction of cm waves with plasma, **1691**
Kahn, F. D., correction of observational data for instrumental bandwidth, **66**
Kaidanovski, N. L., N. S. Kardashev and I. S. Shklovski, emitters of cosmic radio emission on λ 3·2 cm, **1044**
Kaiser, T. R., Meteors, **(B)2741**
—— with others, radio echoes from meteor trails, **2037**
Kaiser, W., P. H. Keck and C. F. Lange, infrared absorption in Si and Ge, **2433**
Kakinuma, T., with others, solar enhanced region at cm-λ from eclipse observations, **2043**
Kalashnikov, S. G., and N. A. Penin, influence of frequency on rectifying properties of semiconducting diodes, **1889**
—— and A. E. Yunovich, variation of conductivity of Ge by external field, **1448**
—— with V. V. Ostroborodova, effect of heat treatment on Ge, **2104**; recombination at thermal acceptors in Ge, **2105**
Kalinina, A. M., with others, ferroelectric properties of stannates, **3405**
Kallen, R., influence of long-wave transmissions on high-frequency diffusion, **3877**
Kallmann, H., B. Kramer and A. Perlmutter, infrared stimulation of photoconductivity in luminescent powders, **131**
Kalnajs, J., with others, densities and imperfections of single crystals, **838**
Kamenski, E. I., quartz parameters and oscillator design, **2770**
Kaminow, I. P., with R. H. Kircher, super-regenerative transistor oscillator, **3002**
Kaminski, D. L., with others, electron-optical properties of magnetic gaps, **1178**
Kamiryo, K., with others, Zeeman effect in NH_3 microwave spectra, **93**
Kamke, D., and H. J. Rose, carrier density in plasma, **3336**
Kanai, Y., galvanomagnetic effects in InSb, **477**; inductive part in characteristics of semiconductor diodes, **599**
—— and R. Nii, impurity conduction in Ge, **2792**
Kanavina, N. G., with others, depiction of domains of ferromagnetic material, **1793**
Kanaya, S., with K. Miya, radio propagation prediction considering scattering, **235**; lateral deviation of radio waves, **3508**
Kaner, E. A., with M. Ya. Azbel', anomalous skin effect, **3022**
Kanzaki, C., with others, influence of infrared rays on photoconductivity of CdS, **130**
Kapitsa, S. P., photoelectric fluxmeter, **2163**
Kappelhoff, K. H., with others, statistical distribution of random electrical processes, **2166**
Kaprielian, Z. A., dielectric properties of lattice of anisotropic particles, **1671**
Kaptsov, N. A., with N. A. Popov, discharge in frequency region between h.f. and a.f., **3025**
Karasik, N. Ya., with others, X-ray investigation of solid solutions of $BaTiO_3$-$PbZrO_3$, **1436**
Karbowiak, A. E., propagation in anisotropic waveguides, **2287**
Kardashev, N. S., with others, emitters of cosmic radio emission on λ 3·2 cm, **1044**
Karlov, N. V., with F. V. Bunkin, sensitivity of radiometers, **221**
Karmen, K. N., after-effects in Rochelle salt, **1743**
Karnovski, M. I., with L. N. Bondareva, directional properties of sound lenses, **315**
Karp, S. N., with J. Shmoys, calculation of charge-density distribution from transit time data, **3382**
Karplus, W. J., use of analogue computers with resistance-network analogues, **673**
Kashirin, V. A., with others, Russian bibliography on telemetering, **869**
Kashtanova, A. M., with G. I. Skanavi, semiconducting ceramics based on WO_3, **3109**
Kason, J., distribution systems, **1210**
Kasper, J. S., and B. W. Roberts, magnetic structure of Mn, **2127**
Kasuya, I., measurement of bearing of incoming short waves, **549**
—— and R. Sawada, f_oF_2 at observatories in Japan, **3052**
—— S. Katano and S. Taguchi, spread echoes in F region over Japan, **1713**
Katagiri, S., chromatic aberration in electron microscope, **883**
Katano, S., with others, F_2-layer multiple reflections, **894**; spread echoes in F region over Japan, **1713**
Kato, K., with S. Kojima, electron avalanches in gas discharge, **3337**
Kats, A., and J. M. Stevels, effect of radiation on SiO_2, **3460**
Katsenelenbaum, B. Z., perturbation of e.m. field by deformations, **87**; waveguides, degenerate oscillations in, **665**, curved, **3633**
Katz, H., and K. L. Rau, generation of harmonics, **61**
Katz, L., interpolation errors in curves, from commutated data, **3506**
—— and T. B. Friedman, u.h.f. satellite transmitter-receiver, **2553**
Katzin, M., with W. S. Ament, fluctuations in long-range over-water propagation, **3185**
Katzman, J., with others, effective geomagnetic equator **3721**
Kaufman, H., bibliography of nonuniform transmission lines, **2617**
—— with others, tables of Bennett functions for two-frequency modulation product, **2213**
Kaule, W., and A. Johne, audio-frequency spectrometer, **2174**
Kaus, P., with others, improvements in colour kinescopes, **1567**
Kaus, P. E., effect of magnetic deflection on beam convergence, **3553**
Kawabata, K., with others, magnetic storms, solar phenomena and cosmic-ray storms, **1708**
Kawabe, K., with others, thermal transition of transparency in $BaTiO_3$, **453**
Kawaji, S., with A. Kobayashi, adsorption and surface potential of semiconductors, **3788**
Kawakami, K., and H. Akima, time constants of detectors in noise measurements, **1864**; measuring radio noise voltage, **3137**
—— T. Takahashi and M. Onoue, discriminating disturbances in solar noise observation, **741**
Kay, H. F., electrostriction, **2088**
Kaye, J., applications of heat transfer to electronics, **3290**
Kaye, S., with others, Ge diffused-junction photocell, **615**
Kazakevich, V. V., interrelation between Rayleigh's and van der Pol's equations, **3132**
Kazan, B., and F. H. Nicoll, electroluminescent light-amplifying panel, **933**
—— with F. H. Nicoll, large-area photoconductive cells using CdS powder, **612**
Kazes, I., with others, atmospheric absorption at 9·35 kMc/s, **2737**
Keck, G., with F. Hauer, rendering ultrasonic waves visible, **963**
Keck, P. H., with others, infrared absorption in Si and Ge, **2433**
Keenan, T. C., with K. E. Wood, multi-trace c.r. tube display, **1823**
Keep, D. N., f.m. radar for mercantile marine, **3072**
Keffer, F., temperature dependence of ferromagnetic anisotropy **1686**
—— with M. H. Cohen, dipolar ferromagnetism at 0°K, **397**
Keitel, G. H., mode solutions of forward scattering by meteor trails, **234**; dipole resonant mode of ionized gas column, **2693**
Keltzer, E., with R. J. Duffin, formulae relating equivalent networks, **3664**

Kelleher, K. S., dielectric microwave lenses, **2964**
Keller, A., auxiliary bridge for loss-factor measurements, **2172**
Keller, J. B., reflection and transmission of sound by moving medium, **1273**
—— with F. G. Friedlander, asymptotic expansions of solutions of $(\nabla^2 + k^2)u = 0$, **398**
Keller, M., and M. Ploke, X-ray images made visible by television tube, **1901**
Kelly, J. L., Jr, new interpretation of information rate, **3875**
Kel'man, V. M., and I. F. Krasnov, determination of electron current by use of rubber membrane, **2851**
—— and S. Ya. Yavor, cylindrical magnetic lenses, **2508**
—— with I. F. Krasnov, planar diode with limited-width emitting surface, **2852**
—— with others, electron-optical properties of magnetic gaps, **1178**
Kelner, R. C., and M. H. Glauberman, magnetic shift-register correlator, **3286**
Kemp, R. F., c.r.o. intensity modulator, **1825**
Kennaugh, E. M., radar polarization power scattering matrix, **(D)2399**
Kennedy, R. C., pedestal processing amplifier for television studio, **3544**
Kennel, J. M., with D. S. Hughes, elastic-wave velocity in fused quartz and armco, **1131**
Keohane, K. W., and W. K. Metcalf, characteristics of photomultiplier cells, **297**
Keonjian, E., micro-power operation of Si transistors, **3898**
Kerner, K., electron emission from cold metal surfaces, **2360**
Kerns, D. M., with A. C. MacPherson, measurement of s.w.r., **3489**
Kerr, F. J., and G. de Vaucouleurs, Magellanic clouds, motions of, **1702**, masses of, **2709**
Kerr, J., and C. Wert, effect of nitrides on coercive force of iron, **482**
Kerr, J. T., J. G. V. Taylor and H. E. Duckworth, reliability of atomic masses in Cr Ge region, **96**
Kersten, M., magnetization changes along the hysteresis loop, **498**
Kestelyn-Loebenstein, A., emission and conduction of oxide cathodes, **3584**
Kestin, J., and L. N. Persen, error function of complex argument, **2467**
Ketchledge, R. W., distortion in feedback amplifiers, **1011**
Key, E. L., with R. P. Sallen, designing *RC* active filters, **2662**
Key, F. A., and W. G. P. Lamb, nonlinear *RC* circuit, **29**
Keyes, R. W., effect of pressure on conductivity of InSb, **162**; elastoresistance of *n*-type Ge, **1450**
Khandekar, P. V., with others, PbS point-contact rectifiers, **2560**
Kharkevich, A. A., and E. L. Blokh, transmission capacity of communication system, **259**
Khar'yuzov, R. V., with S. M. Ryvkin, mobility of carriers injected by light, **1082**
Khizhnyak, N. A., with Ya. B. Fainberg, anisotropic media, **979**
Khlebnikov, N. S., with L. G. Letetzen, feedback in photoelectron multipliers, **1580**
Khodakov, A. L., and others, single crystals of Ba and Sr titanate solid solutions, **3757**
Khurana, B. D., ionospheric focusing and image zones, **3512**
Kikuchi, M., and Y. Tarui, 'step' phenomena in A-type transistors, **603**
Kilham, L. F., Jr, and R. R. Urach, transformer miniaturization using fluorochemical liquids, **1976**
Kimata, M., and T. Nomura, electroluminescence in ZnS, **3754**
Kinase, W., interactions among ions of $BaTiO_3$ crystal, **139**
—— and H. Takahashi, spontaneous deformation of $BaTiO_3$, **1742**
Kinchin, G. H., and R. S. Pease, displacement of atoms by radiation, **2034**
King, A. P., and E. A. Marcatili, resonance of loosely coupled modes in multi-mode system, **3635**
King, D. D., advances in microwave techniques 1954, **1952**
King, G., with others, diffusion cathode, **1258**
King, G. A. M., electron distribution in ionosphere, **2378**
—— and C. H. Cummack, electron distribution in ionosphere, **2722**
King, R. E. J., inside cathode, equivalent circuit for, **2586**, *I/V* characteristics of, **2917**
Kingdom, B. E., S-band variable attenuator, **51**
Kingston, R. H., review of Ge surface phenomena, **2108**
Kinman, T. H., and C. Hayward, crystal cutting, **1441**
—— and others, Ge and Si power rectifiers, **2885**
Kinney, D. E., modified calcium pyrophosphate phosphors, **2079**
Kino, G. S., with others, transverse-current travelling-wave valve, **3252**
Kip, A. F., with others, plasma resonance in crystals, **1108**; cyclotron resonance in Ge-Si alloys, **1456**
Kirby, R. C., with others, v.h.f. transmission by scattering in lower ionosphere, **243**
Kircher, R. J., and I. P. Kaminow, super-regenerative transistor oscillator, **3002**
Kirchner, F., and H. Kirchner, ionization and desorption due to strong fields, **1360**
Kirchner, H., with F. Kirchner, ionization and desorption due to strong fields, **1360**
Kirschstein, F., and H. Bödeker, European television transmission network, **274**
Kisselbach, V. J., with others, α-ray emission from earth's surface, **3370**
Kita, Y., correction factors for concentric slotted lines, **858**
Kitsopoulos, S., photoelectric analogue computer, **30**
Kitaunezaki, T., with others, divergence factor of wave reflected from ionosphere, **1849**
Kittel, C., and A. H. Mitchell, ferromagnetic relaxation and gyromagnetic anomalies, **2817**
—— with others, plasma resonance in crystals, **1108**
Klasens, H. A., with A. Bril, phosphors for tricolor television tubes, **783**
—— with others, solid-state image intensifiers, **1897**
Kleen, W., and K. Pöschl, focusing electron beams by magnetic fields, **618**
Kleimack, J. J., with A. J. Wahl, reliability of alloy-junction transistors, **2243**
Klein, G., rejection factor of difference amplifiers, **362**
Klein, M. L., F. K. Williams and H. C. Morgan, circuits used in digital automation, **2638**
Klein, W., and W. Friz, gas-discharge tube for noise measurement, **3483**
Klein, W. P. G., bifilical travelling-wave valve, **2574**
Kleinman, D. A., forward characteristic of *p-n* diode, **3226**
Kleinwächter, H., impedance transformation of linear 2*n* terminal networks, **1995**
Klemperer, O., with K. T. Dolder, space-charge effects in electron-optical systems, **1363**; h.f. oscillations in space charge of electron emission systems, **3581**
Klimeš, B., circle diagram for acoustics, **1286**
Kline, M., asymptotic solutions of Maxwell's equations, **1667**
Klinger, M. I., Hall effect in ionic semiconductors, **1757**
—— with A. G. Samoilovich, theory of semiconductors with impurity band, **3416**
Klinker, L., UKW-Fernempfangsbeobachtungen, ihre Bedeutung für Meteorologie und Funktechnik, **(B)2878**
v. Klitzing, K. H., with J. Gielessen, Hall effect of InSb at high pressures, **3794**
Klokholm, E., with others, ferromagnetism in noble-metal alloys containing Mn, **175**
Klopfenstein, R. W., transmission-line taper, **976**; optimum transmission-line matching section, **(D)3278**
—— and J. Epstein, polarguide waveguide filter, **1330**
Klotsbaugh, G. A., theory of continuous-tone underwater reverberation, **643**
Kluge, W., research on photoelectricity, **68**
—— and A. Schulz, reduction of cathode fall of glow discharge, **389**
Kiyarfel'd, B. N., and others, characteristics of discharge at positive probe, **2686**
Kmosko, J. A., and H. G. Johnson, *long long* Yagis, **1961**
Knappe, W., analysis of grid current, **2908**
Knappwost, A., smallest size of domains in Co, **484**
Knauss, J. A., effect of ocean turbulence on sound propagation, **2931**
Knecht, R. W., relations between aurora and sporadic-E echoes, **2390**
Knechtli, R. C., and W. R. Beam, electron guns for noncircular spots, **3593**
Knight, B. E., application of relaxation methods of computation, **3821**
Knight, C. R., E. R. Jervis and G. R. Herd, definition of terms in study of reliability, **2596**
Knol, K. S., with H. Groendijk, noise of valves and transistors, **616**
—— with others, noise factor of four-terminal networks, **691**
Knoop, E., current rise in gas triodes and tetrodes, **639**; ignition sensitivity and delay time in gas-filled valves, **1921**
Knott, R. D., and J. I. Missen, EW54 Ge-junction rectifier, **1217**
Kobayashi, A., and S. Kawaji, adsorption and surface potential of semiconductors, **3788**
Kobayashi, D., with others, travelling-wave valves for 4-kMc/s band, **2576**
Kobayashi, J., and R. Ueda, X-ray study of ferroelectric $PbTiO_3$, **786**
Kobayashi, M., with others, 40–50-Mc/s overtone quartz units, **2330**
Kobayashi, T., D-E layer model from considerations of absorption, **2194**
Kobayasi, S., energy-band structure of SiC, **2791**
Koch, K. M., galvanomagnetic effects in ferromagnetic materials, **2133**
Kocher, G., thermoelectric Benedicks effect, **712**
Kocherzhevskii, G. N., radiation of electric vibrator near cylinder, **1624**
Kock, W. E., speech bandwidth compression, **2605**
Kodman, F., Jr, with others, detection of signals by human and electronic detector, **3609**
Koechlin, Y., optical arrangement of scintillation counter, **1516**
Koehler, W. C., with E. O. Wollan, magnetic properties of compounds $((1-x)La_xCa)MnO_3$, **1114**
Koenig, H. P., with others, diffraction of microwaves, **2699**
Koester, C. J., with others, X-ray absorption of Te and Se, **1440**
Kogan, B. Yu., with others, electronic analogue apparatus of U.S.S.R. Academy of Sciences, **2636**
Kogan, S. Kh., theory of helical lines, **2954**
Kohler, M., with others, bolometers at low temperatures, **1499**
Köhler, W., television microscopy, **3837**
Kohlsdorf, E., resonators, wedge-shaped cavity-type, **1**, sound absorption by, **3604**, coupled vibrations in, **3617**
—— with others, optimum reverberation time for studios, **10**
Kohn, W., and D. Schechter, theory of acceptor levels in Ge, **808**
Kohnke, E. E., and A. W. Ewald, Hall effect in grey tin, **3795**
Kojima, H., magnetic behaviour of Fe-Ni compacts, **178**
—— with others, effects of Bi_2O_3 on ferrites, **832**
Kojima, S., and K. Kato, electron avalanches in gas discharge, **3337**
—— with others, observation of nuclear resonances with coaxial-cavity spectrometer, **1696**
Kojima, Y., resonance in α-Fe_2O_3, **2132**
—— with others, Zeeman effect in NH, microwave spectra, **93**
Kok, J. A., gas-filled triodes, **2925**
Kolb, E. D., with H. E. Bridgers, rate-grown Ge crystals for h.f. transistors, **467**
Koller, L. R., voltage drop through phosphor screens and cathodoluminescent lamps, **3756**
Kolomenski, A. A., radiation from electron in magnetic field, **2364**; synchrotron oscillations due to radiation fluctuations, **3164**
Kolomiets, B. T., and N. A. Goryunova, ternary semiconducting systems, **1751**
—— with N. A. Goryunova, ternary semiconducting systems, **3417**
—— with others, photoconductivity and luminescence of CdS(Cu), **3750**
Kolomoets, N. V., with others, semiconductor thermocouples, **2430**
Kolotilova, V. G., with E. I. Adirovich, transfer characteristics of semiconductor triodes, **1892**; propagation of pulse in semiconductor, **3243**
Komar, A. P., N. M. Reinov and S. S. Shalyt, photomagnetoelectric effect in Cu_2O at low temperatures, **822**
Kompaneets, A. S., and Yu. S. Sayasov, almost conical e.m. resonators, **1640**
Kompfner, R., with others, coupled helices, **1612**
Kondo, A., with others, travelling-wave valves for 4-kMc/s band, **2576**
Kondoh, H., with E. Uchida, magnetic properties of NiTe, **2813**
—— with others, magnetic and electric properties of MnTe, **2812**
Kondoh, I., with others, magnetic storms, solar phenomena and cosmic-ray storms, **1708**
Kondorskii, E., and I. Ozhigov, resistance of Fe-Ni alloys in magnetic field, **1777**
—— with E. I. Gurvich, relation of magnetic characteristics to thickness of lamination, **1133**
König, H. W., noise temperature of space-charge-limited diodes, **947**
Kono, T., M. Hirai and Y. Uesugi, diffraction effect of mountains for v.h.f. radio communication, **1859**
—— and others, studies on diffracted waves from a mountain, **898**
Konorov, P. P., with others, electrical properties of CdTe, **3789**
Konorski, B., new theorems on e.s. field, **3328**
Konovalenko, B. M., with others, photoelectric properties of compounds with zinc-blende structure, **2779**
Konovalov, V. M., V. I. Kulakov and A. K. Fidrya, conductivity of Bi_2O_3, **3110**
Koomen, M., R. Seolnik and R. Tousey, night airglow (OI) 5577A and sodium D layers, **3369**
—— with others, altitude of (OI) 5577A line in night airglow, **3368**
Koonce, S. E., with L. Egerton, effect of firing cycle on $BaTiO_3$ ceramics, **1434**
Kopte, G., with others, statistical distribution of random electrical processes, **2166**
Koptsik, V. A., new piezoelectric crystals, **2770**
Korenblit, L. L., and T. Ya. Shraifel'd, theory of high-conductivity semiconductors, **2094**
—— with A. G. Samoilovich, degeneracy of electron gas in semiconductors, **2426**
Kornetzki, M., relation between hysteresis coefficient and permeability, **3123**
—— and H. Burger, ferrite cores with rectangular loops in nonuniform fields, **490**
—— and I. Lucas, hysteresis losses in rotating magnetic field, **499**
—— J. Brackmann and J. Frey, ferrites with permanent-type hysteresis loops, **489**
Korneva, L. A., with V. V. Shuleikin, winds in the ionosphere, **2734**
Kornfel'd, M., and N. Melekhova, swelling of liquid surface under ultrasonic radiation, **1278**
Kornhauser, E. T., with others, propagation of sound pulses in dispersive medium, **1931**
Kortman, C. M., transistors telemeter small missiles, **3182**
Kosche, E., with others, flying-spot scanning, **2233**
Koškarev, D. G., with L. L. Gedin, synchrotron oscillations in strong-focusing accelerators, **1839**
Kossel, W., E. Menzel and G. Naumann, junction rectification and crystal orientation, **2809**
Koster, J. R., with others, spread F-layer echoes and radio star scintillations, **2731**
Kostetskaya, I. A., with others, Russian bibliography on telemetering, **869**
Kostić, V. N., with D. T. Jovanović, distributed amplifier using secondary-emission valves, **1342**
Kostina, T. I., with others, galvanomagnetic properties of Bi, **1472**
Kotadia, K. M., sporadic echoes from E region over Ahmedabad, **3048**
Koustas, P., audio standard generator, **863**
—— and D. D. Mawhinney, magnetron tester detects lost pulses, **3498**
Kouvel, J. S., specific heat of magnetite crystal, **3806**
Kovaly, J. J., with others, detection of signals by human and electronic detector, **3609**
Kover, F., with others, preparation and effective masses for InSb, **3108**
Koyama, J., with others, travelling-wave valves for 4-kMc/s band, **2576**
Kozanowski, H. N., and S. L. Bendell, film requirements and masking techniques for colour television, **3546**
Kozlobaev, I. P., $BaTiO_3$, permittivity of, **788**, stability of piezoelectric effect in, **2770**
Kraak, W., statistical treatment of reverberation, **3272**
Krabbe, C., time constant of transductors, **2318**
Krag, W. E., with W. M. Bullis, Hall effect in oriented crystals of *n*-type Ge, **2112**
Krägeloh, W., two-pole function with prescribed complex values, **684**
Kramarov, O. P., with others, single crystals of Ba and Sr titanate solid solutions, **3757**
Kramer, B., with others, infrared stimulation of photoconductivity in luminescent powders, **131**
Kramer, S. I., measurement of amplitude linearity, **3478**
Krasil'nikov, V. A., with K. V. Goncharov, thermal oscillations of piezoelectric crystals, **2770**
Krasnov, I. F., and V. M. Kel'man, planar diode with limited-width emitting surface, **2852**
—— with V. M. Kel'man, determination of electron current by use of rubber membrane, **2851**
Kratz, H. R., with others, 300 MeV electron synchrotron, **874**
Kraus, G., fading over microwave radio paths, **2206**
Kraus, J. D., radio signals from Venus, **3357**, **3358**
Kraus, M. H., developments in closed-circuit television, **1874**
Krause, H., and H. Käding, television outside broadcast van, **1230**
Kraushaar, W. L., magnetic field in vicinity of solar system, **737**
Krausz, R., with others, telemetering aerial system for supersonic aircraft, **2623**
Kresain, G., with H. Lange, influence of crystal structure on luminescence of calcium silicate, **1067**
Krishnan, K. S., and S. C. Jain, thermionic constants of semiconductors, **1887**
Krog, J., thermistor hypodermic needle, **3840**
Kröger, F. A., physical chemistry of crystal phosphors, **778**
—— and D. de Nobel, preparation and electrical properties of CdTe single crystals, **145**
—— with others, zone melting of decomposing solids, **145**
Kroizig, A., differentiating equalizer for television, **279**
Kromhout, O. M., with others, transverse-field travelling-wave valves, **1252**
Kronenberg, S., and C. A. Accardo, dielectric changes in inorganic phosphors, **2406**
Kronjäger, W., and K. Vogt, fluctuations of direction of arrival of short waves, **1201**
Krook, M., with E. P. Gross, collision processes in gases, **3345**
Krösa, A., and K. Ganzhorn, transistors in computer technique, **1629**
Krügel, L., uniform wide-band cables, **660**
Krumbiegel, J., and K. H. Jost, investigations on ZnS crystals, **2759**
Kryiova, T. V., and I. V. Mochan, Nernst effect in Ge, **3437**
Ku, Han-Ying, with others, cyclotron resonance in Ge-Si alloys, **1456**
Kuchinsky, S., with H. Moss, ten-channel time-division multiplexer, **3662**
Kuehn, R. L., signal-triggered sweep magnifies pulse widths, **2173**
Kuhnel, A. H., industrial uses of special-purpose computers, **27**
Kulakov, V. I., with others, conductivity of Bi_2O_3, **3110**
Kulcsar, F., $BaTiO_3$ ceramics, **2413**
Kulikowski, R., and J. Plebański, optimum characteristics of linear pulse systems, **1327**
Kulin, S. A., with others, effect of dislocations on minority carrier lifetime, **2435**
Kumagai, H., and others, magnetic resonance in α-Fe_2O_3, **486**
Kümmel, U., with K. W. Boer, field breakdown of CdS crystals, **135**
—— with others, noise in CdS single crystals, **3792**
Kümmich, R., night effect in consol navigation system, **759**
Kundu, P., a.m.-f.m. demodulator, **551**; f.m. system with asymmetrical 3-phase oscillator, **1650**
Kuper, C. G., Bohm-Pines theory of plasma, **3689**
Kurihara, Y., trans-horizon microwave propagation over hilly terrain, **234**
Kurnick, S. W., and R. N. Zitter, photoeffects in InSb, **2429**
Kurokawa, K., with S. Saito, measuring dielectric properties in microwave region, **1156**
Kurokawa, S., T. Takahashi and M. Arai, measurement of spurious emissions, **1811**
Kurtz, A. D., S. A. Kulin and B. L. Averbach, effect of dislocations on minority carrier lifetime, **2435**
Kurzwell, J., with V. Doleżal, Mikusiński's operational calculus, **1800**
Kusch, P., magnetic moment of electron, **2683**
Kussmann, A., and E. Raub, ferromagnetic and antiferromagnetic properties of Au-Mn, **2450**
—— and J. H. Wollenberger, powder patterns in high-coercivity alnico, **3805**
—— and O. Yamada, coercive force and after-effect of permanent magnets, **2823**
Kuznetsov, P. I., R. L. Stratonovich and V. I. Tikhonov, effect of electrical fluctuations on oscillator, **55**
Kuznetsov, V. D., aerial system with raised reflector, **3647**
Kvartskhava, I. F., effects of high current densities, **3690**
—— with others, resistance of metals at high current densities, **456**

L

Labrousse, R., with G. Collette, f.m. radio altimeter, **3069**
LaCasce, E. O., Jr, and P. Tamarkin, underwater sound reflection from corrugated surface, **1938**
Ladage, A., electron interferences at polished surfaces, **3125**
Ladefroux, J., with J. Peyson, temperature-coefficient of ceramic-dielectric capacitors, **3136**
Laeser, P. B., colour equipment in television station, **1231**
Laett, H. A., video distribution amplifier, **916**
Lagasse, J., and J. Clot, e.m. scanning systems for c.r.o., **216**
Lagercrantz, A., with T. Bohlin, forming of negative electrode of electrolytic capacitors, **1983**
LaGow, H. E., and J. Ainsworth, upper atmosphere measurements with rockets, **2377**
Lagrenaudie, J., dispersion of conductivity of B and B_{12} Al, **804**; study of P_2Zn_3 at low temperatures, **3395**
LaGrone, A. H., A. W. Straiton and H. W. Smith, radio signals on overwater paths, **1530**
Lallemand, A., and M. Duchesne, star spectra by electronic photography, **3161**
Lamb, W. G. P., with F. A. Key, nonlinear *RC* circuit, **29**
Lambe, J., CdS with Ag activator, **1734**
Lamoral, R., measurement of absorption coefficients, **966**
—— and R. Trembasky, new acoustic characterization of rooms, **3619**
Lampard, D. G., with A. M. Thompson, theorem in electrostatics and application to capacitance standards, **2837**
Lampert, M. A., plasma oscillations at extremely high frequencies, **1681**; incidence of e.m. wave on 'Čerenkov electron gas', **3035**
Landauer, R., D. R. Young and M. E. Drougard, polarization reversal in $BaTiO_3$, **3759**
—— with others, Hall effect and conductivity in porous media, **3761**
Landmark, B., and others, ionospheric observations during solar eclipse, **3379**
Lane, J. A., measurement of power at 3 cm λ, **525**; film radiometer for cm λ, **1829**
Lane, P. E., with W. A. Prowse, breakdown of gases in crossed fields, **2024**
Lane, R. N., absorption of chairs and carpet in auditoria, **1945**
—— and E. E. Mikeska, acoustical requirements for music school buildings, **1293**
—— with others, objective and subjective observations on music rooms, **11**
Lang, A. R., and D. A. G. Broad, electron optics of X-ray tubes, **3847**
Lang, F., generation of frequencies in mobile transmitters and receivers, **3882**
Lange, C. F., with others, infrared absorption in Si and Ge, **2433**
Lange, F. H., anode self-modulation, **2900**
Lange, H., and G. Kressin, influence of crystal structure on luminescence of calcium silicate, **1067**
—— with H. Dzierzgwa, luminescence of calcium silicate (Mn, Pb) and zinc beryllium silicate (Mn), **136**
—— with K. Mellentin, magnetometer for measurements on ferromagnetic sheet, **213**
Lange, O. H., with E. G. C. Burt, function generators for analogue computing, **2301**
Lange, T., natural frequencies of horns, **1608**
Lange-Hesse, G., geomagnetic activity and F_2 critical frequencies, **117**, **3380**
Langner, G., adjustable permanent-magnet electron lenses, **1842**
Langsdorff, W., low-frequency amplifiers with transformers in feedback path, **1659**
Langton, N. H., and E. E. Gunn, field of dielectric heating work circuit, **3843**
Lant, R., tone reproduction with electronically cut stencils, **2190**
La Pierre, W., magnetic amplifiers as control components, **363**
Lapin, S. P., and J. J. Suran, impulse noise in f.m. receivers, **2523**
Laport, E. A., and K. L. Neumann, low-power s.s.b. system, **1545**
—— with others, system parameters using tropospheric scatter propagation, **567**, **3185**
Larach, S., and R. E. Shrader, electroluminescence from boron nitride, **3081**
Larenz, R. W., plasma streaming and charge segregation, **3346**
Lark-Horovitz, K., with H. Fritzsche, properties of *p*-type InSb at low temperatures, **160**

Larsen, H., and H. E. Martin, distortion of test pulses over coaxial cables, **3142**
Lasbleis, F., with others, low-temperature study of ferroelectric phosphates and arsenates, **1738**
Lashinsky, H., Čerenkov radiation from electron beams, **3350**
Lashkarev, V. E., and V. I. Lyashenko, surface conductivity of copper oxide, **2117**
Laub, H., and W. Stöhr, horn-parabola wide-band aerials, **2628**
Laudet, M., magnetic electron lens causing no image rotation, **1513**; electron optics of cylindrical systems, **2187**
Lauter, E. A., interference due to atmospherics, **3868**
—— with K. Sprenger, observations of lower ionosphere during solar eclipse, **2062**
Lautz, G., and W. Ruppel, resistance variation of Ge in magnetic field, **2796**
—— with others, bolometers at low temperatures, **1499**
Laver, F. J. M., point-to-point radiocommunication systems, **565**
—— and H. Stanesby, reciprocal transmission over long-distance radio circuits, **1857**
Law, H. B., standard-frequency transmission equipment at Rugby, **(D)515**
Law, J. T., and C. G. B. Garrett, surface properties of Ge, **3431**
—— and P. S. Meigs, effect of water vapour on Ge and Si junctions, **805**
Law, T. S., with A. G. Milnes, a.c.-controlled transductors, **2317**
Lawley, L. E., and R. D. C. Reed, absorption of ultrasonics in liquids, **1603**
Lawn, F., thyratron inverter, **1556**
Lawson, J. D., launching surface waves, **974**
—— and others, high-power demountable klystron for X band, **944**
Lawson, J. L., with others, 300-MeV electron synchrotron, **874**
Lawson, W. D., and others, preparation, electrical and optical properties of Mg_2Sn, **145**
Lax, B., and K. J. Button, new ferrite mode configurations, **325**, in rectangular waveguide, **324**
—— and J. G. Mavroides, Ge and Si with warped energy surfaces, **1759**
—— with R. N. Dexter, cyclotron absorption in Bi, **1471**
Lax, M., and E. Burstein, broadening of impurity levels in Si, **1086**
Lax, P. D., Cauchy's problem for hyperbolic equations, **1801**
Leadabrand, R. L., with others, aspect-sensitive radio reflections from ionosphere, **1527**
Leak, H. J., and A. B. Sarkar, e.s. loudspeakers, **3627**
Leakey, D. M., and R. B. Gibson, ultralinear output transformers, **677**
—— with F. H. Brittain, 2-channel stereophonic sound systems, **1946**, **2607**
Lebeau, A., with P. A. Blum, elimination of slow variations in recording geomagnetic pulsations, **1402**
Lebedev, N. N., with others, e.m. field of linear radiator inside parabolic reflector, **3650**
Leblond, A., interdigital line, operating near π mode, **1908**, u.h.f. magnetron using, **1909**
Leblond, André, equations of propagation of carriers in junction crystal, **1750**; I/V characteristic of semiconductor p-i-p structure, **2776**
—— and R. Gentner, semiconductor structure for h.f. oscillations, **1888**
Le Bot, J., with others, low-temperature study of ferroelectric phosphates and arsenates, **1738**
Le Caine, H., electronic music, **2183**
Leck, J. H., and A. Riddoch, cold-cathode ionization gauge, **3073**
Leconte, A., radar system for harbour surveillance, **1727**
Le Couteur, K. J., and S. Lipton, nonlinear regenerative extraction of synchrocyclotron beams, **1508**
—— A. V. Crewe and J. W. G. Gregory, extraction of beam from Liverpool synchrocyclotron, **873**
LeCraw, R. C., with R. F. Sullivan, ferrite microwave switch, **679**
—— with others, microwave measurements on ferrite spheres, **2846**
Le Croissette, D. H., production of pulse of high-velocity electrons, **3492**
Ledig, G., comparison of transistor and valve, **2001**
Ledinegg, E., transmission of pulses at cm λ, **344**
—— and P. Urban, cavity resonators with non-orthogonal boundaries, **685**
Ledrus, R., M. Hoyaux and A. Vanavermaete, plasmograph for studying electric discharges, **532**
Lee, C. A., diffused-base Ge transistor, **1891**
Lee, E. W., magnetostriction and magnetomechanical effects, **2142**
Lee, R., and N. E. Mullinix, transformer design chart, **2312**
Lees, J., and S. Walton, influence of pressure on metal/Ge contacts, **1095**; surface states on Ge, **1767**
Legvold, S., with others, magnetic properties of erbium, **1787**
Lehman, G. W., and H. M. James, interaction of impurities and mobile carriers in semiconductors, **1749**
Lehmann, R., audiometer standardization, **3612**
Lehmann, W., frequency dependence of electroluminescence, **2082**; dielectric behaviour of electroluminescent ZnS, **2411**
Leigh, R. C., crystal band-elimination filter, **3674**
Leighton, H. I., and D. E. Billings, solar H_α filaments and geomagnetic disturbances, **1399**
Leilich, H. O., development of magnetic-drum stores, **1629**
—— with others, computer at Munich (PERM), **1311**
Leinbach, H., with others, distribution of auroras in Alaska, **1722**
Leisner, W., portable R/T sets in industry, **1550**
Leisterer, R., Fourier representation of beat oscillation, **3203**
Leitelzen, L. G., and N. S. Khlebnikov, feedback in photoelectron multipliers, **1580**
Lemann, I., small automatic computers at Dresden, **2634**
Lemasson-Lucasson, A., I. spectra of Ge and Ge, **3436**
Le Montagner, S., and others, low-temperature study of ferroelectric phosphates and arsenates, **1738**
Lengyel, B. A., with A. D. Berk, magnetic fields in ferrite bodies in microwave cavities, **347**
Lenov, N. N., with I. S. Bruk, electronic differential analyser, **3285**
Lense, J., Rethenentwicklungen in der mathematischen Physik, **(B)198**
Lent, S. J., with A. V. Lord, high-frequency counter, **3310**
Lenz, K. L., with others, resistance of sheets, strips etc. at 10 c/s–100 kMc/s, **1634**
Leon, H. I., fixed-path, variable-frequency acoustic interferometer, **1285**
Leonhard, J., R. D. Mattuck and A. J. Poté, folded unipole aerials, **1616**
Le Page, M., with others, low-temperature study of ferroelectric phosphates and arsenates, **1738**
Lepechinsky, D., 'Q.L.'-'Q.T.' transition level in ionosphere, **3188**, influence on E-layer soundings of, **893**
Le Poole, J. B., with A. C. van Dorsten, Type EM75kV electron microscope, **1841**
Lerch, H. R., special winches for Schwarzenburg s.w. aerial installation, **327**
Le Roux, E., with others, eclipse of Crab nebula, **2711**
Leslie, R., transistor amplifier for radar, **3322**
Leslie, W. H. P., digital differential, **2319**
—— with W. Grimmond, batching and counting using decade tubes, **1981**
Letaw, H., Jr, W. M. Portnoy and L. Slifkin, self-diffusion in Ge, **3429**
Levell, D. A., telegee system of air navigation, **762**
Lever, R. F., with M. Davis, crystal growth of Ge from germane, **3777**
—— with others, zone melting by electron bombardment, **2147**
Levesque, P., and L. Gerlach, metallography of ferrites, **3453**
Levin, B., transformations of Fourier and Laplace types, **2149**
Levin, G. A., with V. K. Turkin, detection of f.m. oscillations, **2521**
Levin, G. Ya., with others, resistance of superconducting tin at 7·3 × 10^{10} c/s, **1776**
Levin, J. B., portable precision approach radar, **126**
Levin, M. L., induced thermal noise in aerials, **3638**; effect of surface curvature on radiation from source, **3702**
Levine, D. J., with W. Sichak, microwave high-speed continuous phase shifter, **321**
Levine, S., with others, anomalous polarization in $BaTiO_3$, **3400**
Levine, S. W., and A. B. Welch, electronic engraving, **2190**
Levitan, G. I., design of rectifiers with electron stabilization, **273**
Levitas, A., Ge-Si alloys, **812**
Levy, L., higher pentode gain, **3008**
Lévy, P., integration of nonlinear equation, **2468**
Lewin, L., with G. Craven, microwave filters with $\lambda/4$ couplings, **1645**
Lewis, B., and E. A. D. White, Na-Cd niobates, **3401**, solid solution effects and ferroelectricity in, **2087**
Lewis, H. W., with others, new low-temperature ferromagnets, **3804**
Lewis, I. A. D., transmission-line devices for mm pulses, **60**
Lewis, J. B., folded monopoles in aerial arrays, **1620**
Lewis, L. R., diffraction pattern in plane of half-screen, **3704**
Lewis, T. J., field emission, mechanism of, **75**; factors influencing, **1026**, from irregular surfaces, **1362**, theoretical interpretation of experiments on, **2690**
Ley, G. S., colour purity in ungated sequential displays **3549**
Li, Yin-Yuan, magnetic-moment arrangements in antiferromagnetic compounds, **1116**; domain walls in antiferromagnets, **2815**; superexchange interactions of rhombohedral sesquioxides, **3447**
Liberman, A. M., with others, acoustic loci and transitional cues for consonants, **9**
Libois, L. J., time-sharing systems for regional links, **3878**
Lichtman, D., r.f. attenuators, **1647**
Liebetegger, A., circuits with nonlinear resistance, **687**
Liebmann, G., magnetic electron lenses, asymmetrical, **880**, pinhole-type, **881**, unified representation of properties of, **882**
Liebson, S. H., infrared quenching in CdS, **1060**
Lied, F., with others, ionospheric observations during solar eclipse, **3379**
Lifshits, I. M., and S. I. Pekar, equations of electrons at surface of crystal, **372**
—— M. Ya. Azbel' and M. I. Kaganov, galvanomagnetic phenomena in metals, **3021**
Light, L. H., and P. M. Hooker, transistor d.c. converters, **573**
Likhter, A. I., with L. F. Vereshchagin, dependence of Hall effect in Bi on pressure, **500**
Lilienstein, M., magnetic-amplifier design, **1343**
Limann, O., 90°-phase shift circuit, **2645**
Lind, A. H., and B. F. Melchionni, optical multiplexing in television film equipment, **3233**
Linder, E. G., with others, electron-voltaic effect in p-n junctions, **2437**
Lindner, P., with others, flying-spot scanning, **2233**
Lindroth, K., reflection of e.m. waves from metal strips, **1731**
Linhart, J. G., Čerenkov radiation, **1004**
—— I. M. Templeton and R. Dansmuir, resonant-cavity method for measuring resistivity, **2158**
Linn, H. J., and K. Pöschl, complex correlation coefficient, **2832**
Linvill, J. G., and R. H. Mattson, junction-transistor blocking oscillators, **356**
—— and L. G. Schimpf, design of tetrode transistor amplifiers, **3684**
Lion, K. S., mechanic-electric transducer, **3159**
Lippert, W. K. R., filter theory of periodic structures, **46**
Lipson, H. G., E. Burstein and P. L. Smith, optical properties of deformed Ge, **154**
Lipton, S., with K. J. Le Couteur, nonlinear regenerative extraction of synchrocyclotron beams, **1508**
Little, A. G., with others, absorption of 3·5-m radiation in nebula NGC 6357, **1395**; r.f. emission from novae and supernovae, **2708**
Little, C. G., W. M. Rayton and R. B. Reed, ionospheric effects at v.h.f. and u.h.f., **3519**
Littlewood, C. A., with others, radio observations of ionosphere at oblique incidence, **1850**
Litvinenko, I. A., with N. A. Tolstoi, measurement of quantity of light in luminescence processes, **1804**
Liu, Yi-Cheng, Pitot method of upper-atmosphere measurements, **3366**
—— with others, upper-air density by falling-sphere method, **3723**
Livesley, R. K., with others, analysis of nonlinear feedback systems, **3223**
Livingston, M. S., High-Energy Accelerators, **(B)1188**
Lo, A. W., with J. A. Rajchman, transluxor, **1637**
Löbl, O., electrical and magnetic units, **1354**
Locke, A. S., and others, Guidance, **(B)3183**
Locke, W. N., and A. D. Booth, Machine Translation of Languages: Fourteen Essays, **(B)2867**
Lockett, G. E., design of nuclear-reactor control mechanisms, **3838**
Locquin, M., phase contrast and interchromatic contrast in electron microscopy, **2507**
Lodge, J. A., with others, photomultiplier pulse durations and shapes, **298**; half-tone charge-storage tubes, **2590**
Loeb, L. B., Basic Processes of Gaseous Electronics, **(B)3353**
Loeber, A. P., and E. A. Biedermann, investigation of ultrasonic waves by light refraction, **1941**
Loebner, E. E., opto-electronic devices and networks, **931**; thermoelectric power etc. of carbons, **2783**
Loeckx, J., amplitude modulation via pentode suppressor grid, **3237**
Loev, D., and others, magnetic core circuits for digital systems, **1313**
Loferski, J. J., optimum semiconductor for photovoltaic solar-energy conversion, **3769**
—— with others, p-n junctions, electron-voltaic effect in, **2437**, GaAs, photovoltaic effect in, **2566**
Logan, R. A., precipitation of Cu in Ge, **1090**; thermally induced acceptors in Ge, **2793**
—— and M. Schwartz, restoration of resistivity in Ge, **1094**
Logue, J. C., with G. D. Bruce, experimental transistorized calculator, **2305**
Lohff, J., and H. Raether, electron emission from metal surfaces, **1027**
Lombardi, P., Galileo Ferraris National Electrotechnical Institute, **957**
Lombardo, J. L., radar warning net, **1728**
Long, D., effect of pressure on InSb, **161**, on semiconductors, **2424**
Longini, R. L., temperature dependence of carrier lifetime, **3098**
—— and R. F. Greene, ionization interaction between impurities in semiconductors, **3409**
—— with J. P. McKelvey, recombination of carriers at dislocation edges, **461**
Longuet-Higgins, M. S., statistical properties of moving waveform, **3326**
Lopukhin, V. M., and Yu. D. Samoedov, graphical method for investigating travelling-wave valves, **2256**
Lord, A. V., and S. J. Lent, high-frequency counter, **3310**
—— with others, suppressed-frame system of telerecording, **918**
Loshakov, L. N., nonlinear phenomena in waveguide with electron beam, **2914**
Loth, H., resistances for electronic apparatus, **1629**
Loucks, H. L., casting resins for electronic components, **2829**
Loud, W. S., periodic solutions of Duffing's equation with damping, **2153**
Loudette, P., and A. Charru, polarimetric study of ferrite, **3636**
Loughead, R. E., compressible ionized fluids, oscillations of, **721**, hydromagnetic flow of, **723**; hydromagnetic stability of current layer, **722**
Lovell, A. C. B., radio astronomy and the atmosphere, **2368**; interpretation of transient echoes from ionosphere, **2713**
—— with J. G. Davies, Giacobinid meteor stream, **410**
Low, G. G. E., surface conductance of Ge in pulsed fields, **1768**; trigger circuits for rectangular pulses, **2000**
Low, W., with Z. Geller, amplification of 1-cm waves in He negative glow, **715**
—— with others, influence of alternating electric fields on light emission of phosphors, **446**
Lowan, A. N., cooling of upper atmosphere after sunset, **1406**
Lowe, C. E., time-voltage pulse discriminator, **1486**
Lowe, R. F., with W. E. Evans, quadriphase time-division multiplexing, **566**
Luborsky, F. E., with others, permanent-magnet properties of elongated iron particles, **826**; effect of shape anisotropy on coercive force, **1460**
Lubszynski, H. G., with others, half-tone charge-storage tubes, **2590**
Lucas, I., with M. Kornetzki, hysteresis losses in rotating magnetic field, **499**
Luchet, A., K index at Kerguelen and Heard Island, **103**
Lüders, G., betatron oscillations in strong-focusing synchrotron, **1509**
Ludwig, G. W., and R. L. Watters, drift mobility in Si, **2790**
—— with R. L. Watters, minority-carrier lifetime in Si, **3094**
Luebbert, W. F., systems approach to electronic reliability, **2268**
Lueg, H., six-terminal-network curve, **3302**
—— and F. Gemmel, dielectric constant of ion-free solid bodies, **210**
—— and H. K. Ruppersberg, dielectric constants of very small amounts of material, **2160**
Lukaszewicz, L., a.m.-a.m. multiplier, **2306**
Lukaszewicz, L. B., constant-frequency oscillators, **(D)2996**
Lundquist, S., subharmonic oscillations in a nonlinear system, **1374**
Lunelli, L., reactive energy in dipole, **39**; impedance of two-terminal network, **3295**
Lur'e, I. E., with others, capacitance analyser of sound field, **964**
Luscombe, G. W., with others, v.h.f. propagation by ionospheric scattering, **1860**
Lusher, G. V. G., with F. A. Benson, effects of heater-voltage variations in stabilizers, **576**
Luther, A. C., Jr, stabilization of pulse duration in monostable multivibrators, **357**
Luttinger, J. M., cyclotron resonance in semiconductors, **3421**
—— and R. R. Goodman, cyclotron resonance of holes in Ge, **1092**
Lyamshev, L. M., diffraction of sound by thin plate, **309**
Lyashenko, V. I., with V. E. Lashkarev, surface conductivity of copper oxide, **2117**
Lyon, A. J., and A. J. G. Moorat, accurate height measurements using ionospheric recorder, **3046**
—— with E. V. Appleton, ionospheric layer formation under quasi-stationary conditions, **755**
—— with others, detection of S_q current system in ionosphere, **1049**; distortion of E layer by electrical currents, **752**
Lyon, R. H., correlation functions in continuous media, **1934**
Lyubarski, G. Ya., with A. I. Akhiezer, theory of coupled cavity resonators, **2655**

M

MacAdam, D. L., new look at colorimetry, **1558**
Macario, R. C. V., with F. W. Chapman, propagation of a.f. radio waves, **3192**
MacDonald, A. D., and J. H. Matthews, breakdown in argon at u.h.f., **3693**
MacDonald, D. K. C., and L. T. Towle, integrals in metallic conductivity, **3691**
Macek, O., test signal generator for television, **1489**
Machery, R., BULL electronic computer 'GAMMA 3', **1629**
Mack, C. L., diversity reception in u.h.f. long-range communications, **254**
MacKay, D. M., high-speed analogue computing techniques, **(D)2968**
Mackintosh, I. M., photon-radiative recombination in PbSe, PbTe and PbS, **2121**; InSb, effects at grain boundaries in, **2804**, magnetoresistance anomalies in, **2805**
—— and J. W. Allen, lifetime of carriers in InSb, **1773**
—— with J. W. Allen, implications of small energy gap and electron mass in InSb, **145**
MacLarty, B. N., with C. F. Booth, new h.f. station at Rugby, **2538**
Macmillan, D., with G. L. Zember, fuel cut-off control for guided missiles, **1186**
MacNichol, E. F., Jr, and J. A. H. Jacobs, measuring reciprocal time intervals, **1828**
MacPherson, A. C., and D. M. Kerns, measurement of s.w.r., **3489**
Macpherson, C., with N. Friedman, cardioid microphone, **970**
Maddock, A. J., servo-operated recording instruments, **3830**
Madelung, O., L. Tewordt and H. Welker, magnetic blocking layer in semiconductors, **2100**
Madhavan, P., with S. K. Chatterjee, propagation of microwaves on single wire, **16**
Maeda, H., daily variations in F_2 region on magnetic equator, **2064**; variations of conductivity of upper atmosphere, **1719**
—— K. Maeda and M. Hirono, geomagnetic distortion in ionosphere, **425**
—— with M. Hirono, distortion of F_2 region on magnetic equator, **424**
—— with others, geomagnetic variations during solar eclipse, **2045**
Maeda, K., with others, geomagnetic distortion in ionosphere, **425**
Maeda, K. I., geomagnetic distortion in F_2 layer, **755**
Maggiore, F., with C. Egidi, parasitic radiations from television receivers, **2237**
Maginniss, F. J., with others, oscillations of coupled windings, **1636**
Magun, S., with others, Van de Graaff generator with liquid charge carrier, **915**
Maher, T., with others, balloon-borne system for tracking sun, **3844**
Major, D., F. R. Perry and K. Phillips, 20-meV betatron for X-ray therapy, **876**
Majorana, Q., importance of r.f. radiation from Jupiter, **407**
Makar, D. R., and H. T. Francis, self-balancing zero-resistance ammeter, **2168**
Makow, D., stable v.f.o., **3306**
Malakhov, A. N., ferroresonant stabilizer of voltage fluctuations, **914**
Malecki, I., use of ultrasonics in mining and geology, **1501**
Malessan, P., with others, depolarization of cells containing MnO_2, **1872**
Mallik, M. C., with H. Rakshit, frequency of RC-coupled oscillator, **1998**
Mallory, K. B., with H. Motz, generation of submillimetre waves, **1036**
Malmberg, C. G., and A. A. Maryott, dielectric constant of water, **2159**
Malsch, J., transistors, **602**
Malvano, R., with others, electric constants of thin films, **2418**; modulation of conductivity by surface charges in metals, **2421**
Malyuzhinets, G. D., emission of sound by wedge, **306**
Mamikonov, A. G., measurement of resistance of water and solutions, **520**
Manavalan, L. S., with others, timing device and nonlinear units for differential analyser, **2637**
Mancianti, M., bridge for measurement of differential resistance, **2854**
Mandel, L., light gain in image intensifiers, **871**
Mandelbrot, B., theory of pre-correction of transmission errors, **907**
Manfield, H. G., dip soldering, **2928**
Manfrino, R., surface preparation and resistivity measurements on semiconductors, **1100**
Mani, A. M., with others, radar observations of rain at Poona, **127**
Manley, J. M., and H. E. Rowe, properties of nonlinear elements, **2988**
Manning, L. A., with others, meteor ionization trails, in extended-range v.h.f. propagation, **236**, oblique reflections from, **3509**
Manooglian, H. A., with A. A. McKenzie, telemetering—electronic data transmission, **2189**
Mansfield, R., magnetoresistance effect in InSb, **145**; impurity scattering in semiconductors, **2103**
Mansfield, W. V., with others, probability distribution of constant vector plus Rayleigh-distributed vector, **197**, **234**
Manus, C., and others, nuclear magnetic resonance in weak fields, **1694**
—— with others, flicker noise of Ge diodes, **1576**
Many, A., D. Gerlich and E. Harnik, carrier-deficit phenomena in Ge, **1096**
—— and others, recombination on Ge surfaces, **2442**
Marayama, H., with K. Hirao, instruments for observation of v.h.f. fading, **854**
Marcatili, E. A., with A. P. King, resonance of loosely coupled modes in multi-mode system, **3635**
March, N. H., with B. Donovan, h.f. conductivity in semiconductors, **3411**
Marcuse, D., energy exchange in surface-wave lines, **2615**
Margerum, D. L., with others, telemetering aerial system for supersonic aircraft, **2623**
Margoninski, Y., with others, recombination on Ge surfaces, **2442**
Mariani, F., theory of photoionization for nonisothermal atmosphere, **749**; electron density in nonisothermal ionosphere, **3727**
—— with P. Dominici, ionosphere F layer, **750**
Marique, J., waveform of radiotelegraph signals, **2522**; response of radio spectrometers, **3153**
Marks, G. W., variation of acoustic velocity with temperature in liquids, **6**
Marmo, F. F., with others, formation of lower ionosphere, **1407**
Marquet, S., mathematical study of Boltzmann's equation, **1668**
deMars, G. A., with others, surface states on Si and Ge surfaces, **2434**
Marshall, J. F., with others, conductivity induced in MgO crystals by electron bombardment, **158**; dependence of secondary-electron emission on angle of incidence of primaries, **3343**
Marshall, W., spin-wave theory of antiferromagnetism, **726**
Martin, A. V. J., television receiver with continuously variable tuning, **1563**; measurement of physical constants by elastic vibrations, **2177**; producing h.f. pulses of large amplitude, **3000**
Martin, D. H., with L. F. Bates, domain structures in alnico, **176**; domain nucleation in Si iron, **2452**
Martin, D. W., acoustics of electronic organ, **1283**
—— R. L. Murphy and A. Meyer, articulation reduction by combined distortion, **3607**
Martin, E. E., with others, temperature-and-field emission from tungsten, **392**; electron emission from clean tungsten, **1912**
Martin, G. E., and J. S. Hickman, directional properties of plane radiators with bizonal shading, **1281**
Martin, H., delay equalizer for television transmission, **2227**

Martin, H. E., with H. Larsen, distortion of test pulses over coaxial cables, **3142**
Martin, L. H., with others, variable-energy cyclotron, **229**
Martin, L. T. J., with E. D. R. Shearman, back-scatter ionospheric sounder, **3197**
Martin, M. B., and D. L. A. Smith, magnetic recording equipment for stereophonic reproduction, **1609**
Marton, C., with others, electron physics tables, **2682**
Marton, L., Advances in Electronics and Electron Physics, Vol. VII, (B)**3265**
—— C. Marton and W. G. Hall, electron physics tables, **2682**
—— D. C. Schubert and S. R. Mielczarek, electron-optical image of atomic beam, **2861**
—— J. A. Simpson and T. F. McCraw, electron scattering measurements, **849**
Marty, B., with C. Fert, use of cylindrical lens in reflection electron microscope, **1182**
Marty, R. S., E. M. Davies and P. J. Franklin, printed resistors, **35**
Martyn, D. F., interpretation of F_2 'winds' as ionization drifts associated with magnetic variations, **755**; F_2 region, survey of present knowledge of, **755**, geomagnetic anomalies of, **755**, ionization distribution in, **2727**; height and ionization changes at maximum of Chapman region, **755**
Marx, G., with P. S. Farago, quantum effects in interaction between electrons and fields, **393**
Maryott, A. A., and G. Birnbaum, microwave absorption in compressed oxygen, **734**
—— with C. G. Malmberg, dielectric constant of water, **2159**
Marzullo, S., with others, dielectric properties in system MgO-CaO-SnO_2-TiO_2, **191**; properties of piezoelectric ceramics, **1073**
Mashkova, E. S., secondary emission from Cs_3Sb, **3787**
Mashovets, T. V., and S. M. Ryvkin, effect of heat treatment on lifetime of carriers in Ge, **2794**
Mason, D. E., A. A. Shepherd and W. M. Walbank, Si-junction power diodes, **3889**
Mason, J. H., breakdown of solid dielectrics in divergent fields, **189**
Mason, S. J., double behaviour of feedback amplifiers, **2669**; feedback theory using signal flow graphs, **2985**
Mason, W. P., with others, dislocations etc. of crystal quartz, **2826**, experimental evidence for, **842**
Masonson, M., error reduction in Loran, **3386**
Masumi, T., with others, photocurrent of CdS in magnetic field, **2756**
Masuzawa, K., with others, stabilization of Type MK-103 capacitor microphone, **2276**; application of titanium to acoustic instruments, **3810**
Mataré, H. F., grain-boundary structure and carrier transport in semiconductors, **3086**; electrical behaviour of bicrystal interface layers, **3764**
Mathews, W. D., with W. G. Royce, d.c. decade amplifier, **3315**
Mathieu, J. P., L. Couture and H. Poulet, optical spectrum of piezoelectric crystals, **1063**
Mathis, V. P., with others, transistor test equipment, **526**
Matossi, F., dependence of light amplification in phosphors on light intensity, **375**
—— and S. Nudelman, electroluminescence excited by pulses, **374**; electrophotoluminescence effects, **2763**
—— with S. Nudelman, electroluminescence output of ZnS phosphors, **2410**
Matras, J., architectural acoustics, **3615**
Matricon, M., with others, Faraday effect in plasma, **732**
Matsuo, Y., multi-beam frequency multiplier, **1255**
Matsushita, S., F_2 variations and geomagnetic disturbances at equatorial zone, **755**; sequential E_s, **2052**
Matthews, J. H., with A. D. MacDonald, breakdown in argon at u.h.f., **3693**
Matthews, R., reliability as design and maintenance problem, **3247**
Matthias, B. T., with others, guanidine aluminium sulphate hexahydrate, **2415**; new low-temperature ferromagnets, **3804**
Mattler, J., electroluminescence of ZnS, **2409**
—— with others, effect of electric fields on X-ray-excited phosphors, **2081**
Mattson, R. H., with J. G. Linvill, junction-transistor blocking oscillators, **356**
Mattuck, R. D., with others, folded unipole aerials, **1616**
Matusche, H., measurement of voltage ratios using dry rectifiers, **203**
Matveev, A. N., synchrotrons with strong focusing, **3165**; synchrotron oscillations in strong-focusing systems, **3504**
Matveev, O. A., with others, electrical properties, of ZnTe, **3439**, of CdTe, **3789**
Matz, S., transient phenomena in ferrite, **1135**
Maurice, R. D. A., visibility of noise over grey scale, **1234**
Mavroides, J. G., with B. Lax, Ge and Si with warped energy surfaces, **1759**
Mawardi, O. K., measurement of acoustic impedance, **2941**
Mawhinney, D. D., with P. Koustas, magnetron tester detects lost pulses, **3498**
Maxwell, A., investigation of F region drift movements by observations of radio star fading, **755**
Maxwell, B., mechanical engineering of dielectrics, **1145**
Maxwell, D. C., Jr, with others, aerosoloscope counts particles in gas, **1836**
May, E. G., with others, miniature loudspeakers, **2277**
May, E. J. P., with E. R. Broad, 10-kW low-pass filter, **47**
Mayer, C. G., colour television in U.S.A., **581**
Mayer, F., correction for line losses in microwave impedance measurements, **206**; magnetic rotatory polarization in Cu ferrite, **1792**; transitions from rectangular to circular waveguide, **2957**
Mayer, G., and J. Gigon, measurement of elastic constants using ultrasonics, **867**
Mayer, H., *Q* factor of piezoelectric crystals, **523**, **2479**, variation with pressure of, **3668**
Mayer, L., electron mirror microscopy, **884**
Mayer, S. E., with others, Ge diffused-junction photocell, **615**
Maynard, F. B., binary adder uses gas-discharge triode, **3261**
Mayo, C. G., and J. W. Head, impedance concept, **2309**
Mayo, G., with F. A. Benson, glow-discharge tubes, running-voltage/current characteristics of, **952**, impedance/frequency characteristics of, **1920**
Mayr, S., matrix representation of complex vectors, **847**; parallel-connected nonlinear impedances, **1974**
Mays, J. M., with others, nuclear magnetic resonance in InSb and GaSb, **1107**
McCaig, M., with J. E. Gould, production of anisotropy in permanent magnet, **828**
McCall, D. W., with others, nuclear magnetic resonance in InSb and GaSb, **1107**
McCarrell, S., noise-factor nomograph, **553**
McCarthy, J. A., with others, digital memory in barrier-grid storage tubes, **1262**
McCarthy, K. A., and S. S. Ballard, thermal conductivity of Ge, **474**
McClure, J. W., field dependence of magnetoconductivity, **2685**
McConnell, R. A., and W. F. Mruk, microacoustic interferometer, **226**
McCoubrey, A. O., with others, mm-wave absorption in superconducting Al, **2354**
McCoy, R., Jr, with S. D. Bedrosian, normalized filter design, **1646**
McCraw, T. F., with others, electron scattering measurements, **849**
McCue, J., with H. H. Theissing, A measurement in mm region, **1827**
McDonnell, D., and W. R. Perkins, stability of closed-loop pulse radar circuits, **269**
McDowell, C. A., with J. D. Craggs, ionization by electron impact, **2019**
McDowell, M. V., with others, wide-band absorbing materials, **1470**
McDuffie, T. E., spectrum analyser for quartz crystals, **202**
McElhinny, M. W., with M. E. Szendrei, solar eclipse 25th December 1954, **2061**, recombination in F layer during, **3733**
McFarlane, W., S. F. Barden and D. L. Oldroyd, Glasgow 340-MeV synchrotron, **538**
McFolin, R. L., with N. Sclar, sawtooth pulser gives voltage/current curves, **862**
McGee, J. D., C.P.S. emitron, **591**
McGee, R. X., O. B. Slee and G. J. Stanley, galactic survey at 400 Mc/s, **735**
McGuire, J. H., high-impedance current-generating circuits, **695**
McKay, K. G., with A. G. Chynoweth, photon emission from avalanche breakdown in Si, **3096**
McKelvey, J. P., drift-mobility measurements in semiconductors, **2777**
—— and R. L. Longini, recombination of carriers at dislocation edges, **461**
McKenzie, A. A., and H. A. Manoogian, telemetering—electronic data transmission, **2189**
McKerrow, C. A., decrease in atmospheric noise during cosmic-radiation storm, **3059**
McKinley, D. W. R., radar echo duration and height of Perseid meteor, **2040**; radio determination of meteor velocities, **3716**
—— with P. M. Millman, meteor echo durations and visual magnitudes, **2039**
McLean, D. A., and F. S. Power, Ta solid electrolytic capacitors, **2982**
McLean, F. C., A. N. Thomas and R. A. Rowden, Crystal Palace television station, **3895**
McMann, R. H., Jr, with K. E. Mulleager, correction circuits for colour TV transmitters, **2232**
McManus, J., with A. L. Albin, interference control in aircraft, **1539**
McNamara, A. G., radar investigations of aurora, **428**
McNicol, R. W. E., with J. A. Thomas, automatic recording of direction of arrival of radio waves, **543**
McNitt, J. R., forward scatter applications, **3185**
McQuarrie, M., structural behaviour in (Ba, Ca, Sr) TiO_3 and relation to dielectric characteristics, **2084**; domain processes in $BaTiO_3$, **2765**
McSkimin, H. J., propagation of waves in cylindrical rods, **2933**
McSweeny, R., v.h.f. radio link in West Indies, **2536**, **3218**
McWhirt, R. B., wide-band amplifier for u.h.f. receivers, **700**
Meadows, R. W., reciprocal transmission conditions over ionospheric path, **1856**
Meakins, R. J., with J. S. Cook, dielectric absorption in pinacol hydrate, **1475**
Mealy, G. H., synthesizing sequential circuits, **28**
Meaney, F. M., with B. R. Bean, refractivity gradient and tropospheric propagation, **241**
Medhurst, R. G., r.f. bandwidth of multiplex systems, **1547**
—— and G. F. Small, echo distortion in f.m. frequency-division multiplex, **1867**, (D)**3214**
Medina, L., corona discharges in h.v. air capacitors, **1805**
Meecham, W. C., distribution of energy reflected from periodic surface, **2698**; Fourier transform method for reflection from irregular surfaces, **2938**
Meek, J. H., and F. S. Hester, recording magnetic variometer, **105**
Melboom, S., with B. Abeles, galvanomagnetic effects in Bi, **2141**
Meigs, P. S., with J. T. Law, effect of water vapour on Ge and Si junctions, **805**
de Meij, S., rubber as electrical conductor, **1143**
Meikle, J. B., and B. Graham, electrons produce high-temperature dielectric, **2464**
Meiklejohn, W. H., and C. P. Bean, new magnetic anisotropy, **3803**
Meinel, E., German Post Office overseas station at Elmshorn, **3535**
Meinke, H., symbols used in communication engineering, **2270**; synthesis of quadripoles from lines with continuous non-uniformities, **2990**
—— and H. Groll, transmission of radar displays, **3744**
Meinnel, J., E. Daniel and Y. Colin, lattice defects and absorption of e.m. radiation by Cu_2O, **2446**
—— with others, influence of light on absorption of e.m. radiation by Se, **2431**
Meinnel, Y., J. Meinnel and Y. Baleau, influence of light on absorption of e.m. radiation by Se, **2431**
Meissner, H., with others, electron emission from superconductors, **3340**
Meissner, W., Benedicks effect, **713**
—— and R. Doll, very high-sensitivity screened galvanometer, **1160**
Meixner, J., and F. W. Schäfke, Mathieusche Funktionen und Sphäroidfunktionen, (B)**511**
Melamed, N. T., with R. Bowers, luminescent centres in ZnS:Cu:Cl phosphors, **776**
Melchionni, B. F., with A. H. Lind, optical multiplexing in television film equipment, **3233**
—— with K. Sadashige, control of light in television projectors, **589**
Melchor, J. L., W. P. Ayres and P. H. Vartanian, energy concentration in ferrite-loaded waveguides, **1615**
—— with P. H. Vartanian, broadband microwave frequency meter, **1496**
—— with others, frequency doubling in ferrites, **2138**
Mellen, G. L., and others, u.h.f. long-range communication systems, **263**
Mellentin, K., and H. Lange, magnetometer for measurements on ferromagnetic sheet, **213**
Melrose, J., with others, detection of signals by human and electronic detectors, **3609**
Meltzer, B., J. A. Lodge and P. L. Holmes, photomultiplier pulse durations and shapes, **298**
Melvin, H. M., contavity of resistance functions, **3292**
Melvin, M. A., and S. Edwards, Jr, theory of vibrations, **2597**
Menard, H. W., with others, acoustic properties of shallow-water sediments, **1930**
Menarry, A., with A. W. Hanson, electronic presentation of optical diffraction patterns, **2180**
Mendel, J. T., microwave detector, **2259**
Mendelsohn, L. I., F. E. Luborsky and T. O. Paine, permanent-magnet properties of elongated iron particles, **826**
—— with others, effect of shape anisotropy on coercive force, **1460**
Menstell, L., with others, h.f. interference by 380 kV installations, **2212**
Mentzer, J. R., Scattering and Diffraction of Radio Waves, (B)**3354**
Menzel, D. H., Fundamental Formulas of Physics, (B)**1392**
Menzel, E., W. Stossel and M. Otter, single crystals with pure surfaces, **1140**
—— with others, junction rectification and crystal orientation, **2809**; intergrowth of Cu and Cu_2O, **3442**
Menzel-Kopp, C., with others, intergrowth of Cu and Cu_2O, **3442**
Mercer, D. M. A., with K. W. Goff, probe microphone analysis and testing, **1296**
Mercier, C., theory of molecular pumps, **3075**
Mercier, R., with others, thicker zones of Ge diodes, **1576**; nuclear magnetic resonance in weak fields, **1694**
Meredith, L., with others, altitude of (OI) 5577A line in night airglow, **3368**
Mermod, R., investigation of oscillating quartz by X-ray diffraction, **1473**
Merritt, F. R., with others, ferromagnetic resonance in Ni-Fe ferrites, **492**; frequency dependence of magnetocrystalline anisotropy, **835**; quantum effects in exciton resonance, **1093**
Merten, R., impedance and admittance surfaces, **2641**
Merz, W. J., with J. P. Remeika, guanidine vanadium sulphate hexahydrate, **2772**
—— with others, guanidine aluminium sulphate hexahydrate, **2415**
Mesnard, G., and L. Eyraud, electromechanical properties of $BaTiO_3$ ceramics, **2083**
—— and R. Uzan, thermionic emission from sintered mixtures, **945**; effect of Zr on sintered oxide cathodes, **946**; sintered capillary cathodes, **3585**
Metcalf, W. K., with R. W. Keohane, characteristics of photomultiplier cells, **297**
Metson, G. H., and D. J. Sargent, electron bombardment of valve envelope, **2588**
Mette, H., slide wire cylinder for measurement of very high resistances, **3473**
Meyer, A., with others, articulation reduction by combined distortion, **3607**
Meyer, E., and H. Severin, absorption of cm-λ waves, **3037**
Meyer, G., electromechanical analogies, **67**
Meyer, H. J. G., interaction of excitons with lattice vibrations, **2705**
Meyer, K., Nernst effect in ferromagnetic metals, **94**; theory of Hall effect in ferromagnetic alloys, **3117**
Meyer, W., television in open-cast mining, **585**
Meyer, W. E., 5th-order aperture aberration in electron microscopes, **3171**
Meyer de Stadelhofen, J., interference radiation from f.m. receivers, **3826**
Meyer-Brötz, G., 4-terminal network parameters of junction transistor, **3563**
Meyers, R. A., and H. B. Davis, triangular-wave analogue multiplier, **3287**
de Mezer, J., with others, solar r.f. radiation during eclipse, **3363**
Michalik, E. R., with M. Goldstein, scattering of light by inhomogeneous solid, **1353**
Michel, K., with E. Ganz, climatic influences in development of electronic equipment, **3598**
Michels, W. C., and B. T. Doser, rating-scale method for loudness measurements, **1292**
Miehle, W., with others, magnetic-core circuits for digital systems, **1313**
Mielczarek, E. V., with H. P. R. Frederikse, thermoelectric power of InSb, **813**
Mielczarek, S. R., with others, electron-optical image of atomic beam, **2861**
Mihran, T. G., with G. M. Branch, plasma-frequency reduction factors in beams, **3573**
Mikaelyan, A. L., dielectric and magnetic permeabilities of artificial media, **140**; rectangular waveguide containing ferrite, **323**; application of electron plasma in non-reciprocal systems, **663**
—— and A. A. Pistol'kors, e.m. waves in magnetized ferrite, **20**
Mikeska, E. E., with R. N. Lane, acoustical requirements for music-school buildings, **1293**
Mikhailov, I. G., with V. A. Solov'ev, theory of compound piezoelectric vibrator, **2770**
Mikhalevski, V. S., and D. N. Venrovski, generation of oscillations by travelling-wave valve, **1591**
Milch, A., bit storage via electro-optical feedback, **3289**
Miles, V. G., resolution of radar pulse, **764**
Millar, R. F., diffraction of e.m. wave by plane screen, **2366**
Millar, W., with others, high-power demountable klystron for X band, **944**
Millea, M. F., and C. T. Tomizuka, melting patterns on InSb crystals, **1774**
Miller, C. W., linear acceleration of particles, **878**
Miller, D. H., with others, 300-MeV electron synchrotron, **874**
Miller, L., absorption of NH_3 on Si, **3426**
Miller, L. E., negative-resistance regions in characteristics of transistor, **1243**
—— and J. H. Forster, accelerated aging with Li-doped transistors, **1242**
Miller, M. A., surface waves in rectangular channels, **2956**
Miller, R. D., with others, 300-MeV electron synchrotron, **874**
Miller, S. L., avalanche breakdown in Ge, **471**
—— and J. J. Ebers, alloyed-junction avalanche transistors, **293**
Millet, J., secondary-emissive Ni-Be alloy, **800**
Millian, K., and W. Rieder, contact resistance and surface of contact, **2461**
Milligan, W. O., with J. T. Richardson, magnetic properties of NiO, **3798**
Millman, P. M., and D. W. R. McKinley, meteor echo durations and visual magnitudes, **2039**
Mills, B. D., and W. W. Wright, rating valves for use under abnormal conditions, **937**
Mills, B. Y., radio emission from bright galaxies, **736**; radio source near galactic centre, **3713**
—— A. G. Little and K. V. Sheridan, absorption of 3·5-m radiation in nebula NGC 6357, **1395**; r.f. emission from novae and supernovae, **2708**
Milnes, A. G., and T. S. Law, a.c.-controlled transductors, **2317**
Milwright, A. L. P., microwave harbour beacon, **124**
Minakova, I. I., and K. F. Teodorchik, synchronization of oscillations, **2333**
Minden, H. T., with R. H. Harada, photosensitization of PbS films, **3751**
Mindlin, R. D., and H. Deresiewicz, vibrations of crystal plates, **1322**
Minkowski, J. M., and E. S. Cassedy, cross-section of collinear arrays, **2627**
Minnis, C. M., brightening of solar limb in far ultraviolet, **412**; electron production in E layer, **753**; new index of solar activity, **1397**; recombination coefficients during eclipse, **3377**; ionospheric measurements during eclipses, **3378**
—— with A. M. Humby, asymmetry in performance of radiotelegraph circuits, **3208**
—— with A. F. Wilkins, arrival angle of h.f. waves, **1200**
Miranda, H. A., Jr, with others, α-ray emission from earth's surface, **3370**
Miró, J., with others, plan for television in Spain, **2230**
Mishchenko, M. T., with A. I. Andrievski, growth of Cu_2O crystals at high temperature, **2799**; occlusions of CuO in Cu_2O layers, **3105**
Misme, P., interference fading caused by frontal discontinuities, **2207**; measurement of atmospheric refractive index with radiosonde MD 1, **3367**
Missen, J. I., with R. D. Knott, EW54 Ge-junction rectifier, **1217**
Missio, D., microwave measurements on dielectrics, **207**
Mitchell, A. H., with C. Kittel, ferromagnetic relaxation and gyromagnetic anomalies, **2817**
Mitchell, A. M. J., and G. Phillips, measurement by nuclear resonance of light-water concentration, **2502**
Mitchell, A. R., round-off errors in finite-difference methods, **3466**
Mitchell, E. W. J., infrared Faraday effect in semiconductor, **1022**
Mitra, A. P., lunar semidiurnal oscillation in ionospheric absorption, **116**; relative D- and E-region absorption, **2048**
Mitra, H., radar observations of thunderstorm, **765**
Mitra, R. K., with others, ionosphere during solar eclipse, **2732**
Mitra, S. N., self-gyrointeraction, **755**; triple splitting over Delhi, **895**
—— and R. B. L. Srivastava, analysis of sky-wave field intensity, **1852**
Mitsuhashi, H., and T. Nakayama, spectral response of photoelectric surface, **3568**
Mitui, T., and S. Miyahara, influence of magnetic field on precipitation of Cu-Co, **1782**
Miura, T., transmission quality and transmission characteristic for Japanese, **312**
Miwa, H., counting-rate ratio meter, **3850**
Miya, K., and S. Kanaya, radio propagation prediction considering scattering, **235**; lateral deviation of radio waves, **3508**
Miyahara, S., with T. Mitui, influence of magnetic field on precipitation of Cu-Co, **1782**
Miyake, K., effect of electron bombardment on emission of Cs-Sb, **1429**
Mizuno, H., with T. Nagata, S_q field in polar region, **2044**
Mochan, I. V., Nernst-Ettingshausen effect in Te, **1756**
—— with T. V. Krylova, Nernst effect in Ge, **3437**
Mogensen, A., theory of reactive nondissipative L-sections, **1328**
Mohanti, H. B., and A. D. Booth, electronic Fourier synthesizer, **987**
Mohanti, S. R. See Mohanty, S.R.
Mohanty, S. R., influence of light on gas discharge, **74**; disappearance of adsorbed gases under electrodeless discharge, **1358**
Moir, J., phase shift and sound quality, **1606**
Moiseiwitsch, B. L., with D. R. Bates, Meinel hydroxyl system in night airglow, **3042**
Mokrovski, N. P., and A. R. Regel', temperature dependence of conductivity of liquid Te-Se, **3419**
Moldovanova, M., effect of temperature of oxidation on conductivity of Cu_2O-Cu system, **159**
Molgedey, G., with others, noise in CdS single crystals, **3792**
Moll, J. L., junction-transistor electronics, **924**
—— and J. M. Ross, transistor parameters and base-layer resistivity, **1244**
—— and others, *p-n-p-n* transistor switches, **3899**
Möllenstedt, G., 100 keV electrons in e.s. electron microscope, **1514**
Möller, H. G., oblique-incidence experiments over 1320 km, **3858**
—— with others, echo sounding of ionosphere at oblique incidence, **1414**
Molloy, E., and W. E. Pannett, Radio and Television Engineers' Reference Book, (B)**1268**
Molokhova, N., with M. Korifel'd, swelling of liquid surface under ultrasonic radiation, **1278**
Mönch, G. C., variation of Volta potential with temperature, **2351**
Monelli, R., gain of transistors, **1241**
Monfils, A., with J. Duchesne, r.f. absorption spectra of piezoelectric solids, **455**
Mongodin, G., and F. Prevot, experimental study of molecular pump, **2752**
—— with others, diffusion pump using freon 12, **3393**
Monroe, R. B., C.B.S. television colour studio 72, **1232**
Montagnani, S., radio-link network, **2535**
Montalenti, G., with A. Ferro, influence of carbon in iron and iron alloys, **1463**
de Montgareuil, P. Guérin. See Guérin de Montgareuil, P.
Montgomery, H. C., with others, noise in Si *p-n*-junction photocells, **1900**
Montroll, E. W., and R. B. Potts, effects of defects on lattice vibrations, **1042**

Moody, N. F., Si-junction-diode modulator, **1663**
Moon, P., and D. E. Spencer, Ampère force, **1371**; differential equations of field theory, **3820**
Moon, P. B., space charge in constant-gradient synchrotrons, **2186**
Moorat, A. J. G., with A. J. Lyon, accurate height measurements using ionospheric recorder, **3046**
Moore, A. R., and H. Nelson, surface treatment of Si, **2439**
Moore, D. G., with others, resistivity of vitreous ternary lead silicates, **2827**
Moore, G. E., L. A. Wooten and J. Morrison, excess Ba content of oxide cathodes, **302**
—— with others, excess Ba in oxide cathodes, **301**
Moore, R. C., with others, status of 'apple' receiver circuits, **3893**
Mooser, E., magnetic susceptibility of electrons and holes in semiconductors, **1747**
—— and W. B. Pearson, new semiconducting compounds, **2091**; chemical bond in semiconductors, **2781**, **3422**
—— with T. M. Dauphinee, measuring resistivity and Hall coefficient of semiconductors, **201**
Morant, M. J., and H. House, work function and patch field of metal surface, **2023**
Moravcsik, M. J., and J. M. Sellen, Jr, gas scattering in strong-focusing synchrotron, **1840**
Morgan, H. C., with others, circuits used in digital automation, **2638**
Morgan, M. G., and G. McK. Allcock, observations of whistling atmospherics, **1724**
—— and H. E. Dinger, observations of whistling atmospherics, **1724**
—— and W. C. Johnson, polarization of h.f. sky wave at vertical incidence, **755**
Morgulis, N. D., ionization method of producing very high vacuum, **2791**
—— and V. M. Gavrilyuk, influence of adsorbed film on work function, **3027**
—— and Yu. G. Ptushinski, diffusion of impurity atoms in oxide cathode, **1914**
Morilleau, E., with others, photomultiplier tube for scintillation counting, **299**
Morin, F. J., and T. H. Geballe, conductivity and Seebeck effect in Ni ferrite, **173**
—— with others, Hall effect and conductivity of InSb, **1772**; chemical interactions among defects in Ge and Si, **3092**
Moriyama, F., with others, solar enhanced region at cm-λ from eclipse observations, **2043**
Moroz, E. M., cyclotron with sectional magnet, **3503**
Morris, D., response functions and vector loci, **690**
Morrish, A. H., and S. P. Yu, coercive force of iron-oxide powders, **170**; measurements on ferrite particles near single-domain size, **3455**; torsion balance for microscopic magnetic particle, **2155**
Morrison, J., with others, excess Ba content of oxide cathodes, **302**
Morrison, S. R., slow surface reaction on Ge, **3778**
Morrow, C. T., and D. E. Rimson, shock spectrum computer, **1969**
Morrow, W. E., with others, u.h.f. long-range communication systems, **263**
Mortenson, K. E., and C. J. Truax, screen-room measurements, **3471**
Morton, C., balance detector with automatic protection, **1162**
Morton, G. A., with M. L. Schultz, photoconduction in Ge and Si, **772**
Morton, J. Y., with others, impedance measuring set, **3149**
Moseley, D. S., anisotropy of polarized $BaTiO_3$, **789**
Moser, H., with J. Fischer, approximate representation of magnetization curves, **3459**
Moser, H. M., and J. J. Dreher, phonemic confusion vectors, **652**; effects of training on listeners, **1290**
Mosetti, F., method of analysing periodicity, **2010**
Moss, H., and S. Kuchinsky, ten-channel time division multiplexer, **3662**
Moss, T. S., photovoltaic and photoconductive theory applied to InSb, **145**; lead-salt photoconductors, **773**; measurements on p-n junctions in PbS, **816**
—— and T. H. Hawkins, recombination radiation from InSb, **2807**
Motz, H., and K. B. Mallory, generation of submillimetre waves, **1036**
Moulton, S. W., with others, beam-indexing colour-television display system, **3893**
Mourier, G., with B. Epstein, phase velocities in systems with periodic structure, **1907**
Moussard, A. M., with others, MnO_2 as depolarizer, **1219**
Mowbray, G. H., J. W. Gebhard and L. L. Byham, sensitivity to changes in interruption rate of white noise, **1943**
Moyano Reina, F., Spain and frequency modulation, **2882**
Mruk, W. F., with R. A. McConnell, microacoustic interferometer, **226**
Muchmore, R. B., and A. D. Wheelon, line-of-sight propagation phenomena, ray treatment, **234**
—— with A. D. Wheelon, line-of-sight propagation phenomena, scattered components, **234**
Mueller, C. W., and N. H. Dittrick, planar alloy junctions for Ge transistors, **2562**
Mues, G., with others, starting of gas discharge in a.c. field, **3338**
Mühleisen, R., atmospheric electricity over continents, **2389**
Mukherjee, S. C., with H. Rakshit, frequency of coincidence of two sets of pulses, **902**
Mukhopadhyay, S. K., absorption of ultrasonics in water, **2932**
Mullaly, R. F., graphical constructions for ray tracing, **755**
—— with P. C. Clemmow, dependence of refractive index on direction of wave normal, **755**
Mullenger, K. E., and R. H. McMann, Jr, correction circuits for colour TV transmitters, **2232**
Müller, C., method for solving Fredholm equations, **1802**
Müller, E. W., field desorption, **3330**
—— and K. Bahadur, field ionization at metal surface, **3329**
Müller, F., far field of paraboloid of revolution, **3651**
Müller, H. G., with others, starting of gas discharge in a.c. field, **3338**
Müller, J., standardization of measurements for television, **1879**
Muller, J. J., pulse multiplex R/T system in Greece, **1207**
Müller, K. A., with G. Busch, Mn impurity centres in grey tin, **478**
Müller, M., design of electron guns for high-space-charge beams, **1911**
Müller, R., space-charge waves in electron streams, **1583**
Muller-Lübeck, K., multipurpose meter, **220**
Mullinix, N. E., with R. Loe, transformer design chart, **2312**
Muncey, R. W., with A. F. B. Nickson, matching for surfaces of acoustic models, **2947**
v. Münch, W., with H. Salow, switching transistor, **3244**
Muncy, J. H., N.R.S. preferred-circuits program, **2324**; Handbook Preferred Circuits, Navy Aeronautical Equipment, NAVAER 16-1-519, **(B)3016**
Mungall, A. G., noise in travelling-wave valves, **3578**
Münster, A., and K. Sagel, electrical properties of TiN and TiC, **2447**
Murai, N., with others, influence of infrared rays on photoconductivity of CdS, **130**
Murakami, T., and R. W. Sonnenfeldt, detectors in symmetric- and asymmetric-sideband systems, **1566**
Muramatsu, K., with Y. Aono, field intensity of ground wave over mixed paths, **542**
Murphy, E. L., and R. H. Good, Jr, thermionic and field emission, **3694**
Murphy, R. L., with others, articulation reduction by combined distortion, **3607**
Murray, C. T., and D. L. Hollway, equipment for solving field problems, **1819**
Murray, R. B., with others, crystalline fields and antiferromagnetic transitions, **1370**
Müser, H. A., thermoelectric force of illuminated ZnS, **2403**
Muss, D. R., capacitance of alloyed In-Ge diodes, **1575**
Musset, E., A. Nikuradse and R. Ulbrich, breakdown field strength in dielectric liquids, **2463**
Mustel', E. R., e.m. oscillations in parabolic tube, **2656**
Muth, H., and G. Ulbricht, portable R/T sets, **1550**
Mutscher, H., with others, optimum reverberation time for studios, **10**
Myers, H. P., with R. G. Butters, structure and magnetic properties of Mn_3AlC, **168**

N

Nag, B. D., and A. M. Sayied, theory of Čerenkov effect, **3700**
Nagai, S., with others, application of titanium to acoustic instruments, **3810**
Nagaraja, N. S., effect of component tolerances in selective amplifiers, **1339**
—— and V. Rajaraman, effect of component tolerances in selective amplifiers, **3682**
—— with others, timing device and nonlinear units for differential analyser, **2637**
Nagata, T., and S. Abe, distribution of SC^+ in high latitudes, **106**
—— and H. Mizuno, S_q field in polar region, **2044**
—— and others, effect of solar eclipse on ionosphere, **1716**
Naismith, R., oblique transmission by meteoric E layer, **2871**
Nakagomi, Y., with others, solar corona and geomagnetism, **2042**
Nakai, J., and S. Nakamura, surface treatment of core metal for cathodes, **631**
—— Y. Inuishi and Y. Tsung-Che, electron emission, conduction and noise of oxide-coated cathodes, **629**
Nakamura, K., effects of infrared on emission of ZnS:Cu phosphors, **443**
Nakamura, S., with J. Nakai, surface treatment of core metal for cathodes, **631**
Nakamura, T., with others, photoelectric studies of night sky light, **1714**
Nakamura, Y., magnetization and magnetostriction of Ni single crystals, **1786**
Nakata, Y., and H. Fujita, eigenvalues of free plate, **962**
—— with H. Uyeda, selective fading on f_M traces, **3863**
—— with others, effect of solar eclipse on ionosphere, **1716**
Nakayama, T., with H. Mitsuhashi, spectral response of photoelectric surface, **3568**
Nalos, E. J., with M. Chodorow, design of high-power travelling-wave valves, **2570**
Nalot, J., with others, carmatron wide-band oscillator, **620**
Nampoothiry, N. S., and R. V. G. S. Rao, X-ray studies of mica, **3816**
Naqvi, A. M., and J. N. Tandon, identification of radio stars, **1394**
Narasimhan, V., with S. Parthasarathy, performance of quartz oscillator in liquids, **1602**
Naschke, E., magnetic dispersion of iron, **3448**
—— with J. Benoit, permeability of conductors at high frequency, **2307**
Nathan, A., note on bandwidth, **2660**
Naumann, G., with others, junction rectification and crystal orientation, **2809**
Neale, D. M., with R. J. Herbeck, shutter tester using photoelectric integrator, **889**
Neaves, A., with D. ter Haar, thermal conductivity and thermoelectric power of semiconductors, **3771**
Nedderman, H. C., space-charge distribution in magnetron, **1584**
Néel, L., energy of Bloch walls in thin layers, **180**
Neglishi, K., with Y. Torikai, method for visualization of ultrasonic fields, **2273**
Neitzert, C., with others, magnetic pulse modulators, **36**
Nelson, H., with A. R. Moore, surface treatment of Si, **2439**
Nelson, R. C., cyanine dyes, photoconductivity of, **2401**, sensitization of photoconductivity in CdS by, **2402**
Nemet, A., and W. F. Cox, intensification of X-ray image, **2510**
Nenohi, M., with others, transmission of microwaves over sea, **3861**
Neporent, B. S., and P. P. Feofilov, 4th symposium on luminescence, **2679**
Neprimerov, N. N., remarks on Salikhov's work, **186**
Neretina, N. A., with others, characteristics of discharge at positive probe, **2686**
Nesbitt, E. A., and H. J. Williams, shape and crystal anisotropy of alnico 5, **825**
—— with others, Co ferrite heat-treated in magnetic field, **1788**
Nestel, W., 2½ years of German television, **278**
Nettell, D. P., digital methods in control systems, **1834**
—— with S. K. Dean, digital potentiometer, **1314**
Neubert, T. J., with M. Burton, effect of neutron bombardment on graphite, **3424**
Neuman, M., with others, dynamics of ionized media, **2361**
Neumann, H., measurement of magnetization curve, **212**
Neumann, K. L., with E. A. Laport, low-power u.s.b. system, **1545**
Newell, G. F., and J. G. Spencer, photographic records of effect of noise on television picture, **1234**
—— with others, v.h.f./u.h.f. field-strength recording receiver, **3528**
Newman, P., with others, v.h.f. tropospheric overwater measurements far beyond horizon, **234**
Newman, R., properties of In-doped Si, **150**; visible light from Si p-n junction, **1088**
—— H. H. Woodbury and W. W. Tyler, photoconductivity in Mn-doped Ge, **3435**
—— with W. C. Dash, optical absorption in Ge and Si, **465**
Newsome, J. P., Q-meter method for very low reactance, **522**; measurement of self-capacitance of inductor, **3475**
Neyman, M. S., designing waveguides and oscillatory systems, **17**
Niccolai, L., Italian coaxial network, **262**
Nicholson, S. B., and O. R. Wulf, diurnal variation of geomagnetic fluctuations, **1403**
Nickson, A. F. B., sound amplification in reverberant spaces, **1605**
—— and R. W. Muncey, matching for surfaces of acoustic models, **2947**
Nicolet, M., nitrogen oxides, aeronomic problem of, **747**, and airglow, **1405**
—— with J. Hunaerts, ionospheric results during eclipses, **1412**
Nicoll, F. H., high-transconductance gun for kinescopes, **1597**
—— and B. Kazan, large area photoconductive cells using CdS powder, **612**
—— with B. Kazan, electroluminescent light-amplifying panel, **933**
Nicoll, G. R., noise in Si microwave diodes, **(D)601**
Nidey, R. A., and D. S. Stacey, photoelectric angular-error sensors, **3162**
Nielsen, I. L., with J. Hansen, Copenhagen television station, **1569**
Nielsen, S., with others, preparation, electrical and optical properties of Mg_2Sn, **145**
Niese, H., sound pulses for acoustic measurements, **3267**
Nieksen, K. F., resonance in nearly compensated ferrimagnetic, **2814**
Nii, R., with Y. Kanai, impurity conduction in Ge, **2792**
Niimi, T., temperature dependence of capacitance of Cu_2O rectifier, **270**
Nijo, T., miniaturization of circuit parts, **2008**
Nikitine, S., and R. Reiss, spectra of semiconductors, **2099**
Nikuradse, A., with others, breakdown field strength in dielectric liquids, **2463**
Nilan, T. G., with W. S. Paxton, domain configurations in grain-oriented Si steel, **169**
Nisbet, A., source representations for Debye's e.m. potentials, **1372**
Nishikori, K., with others, studies on diffracted waves from a mountain, **898**
Nishioka, A., optical observation of first-order transition of $BaTiO_3$, **452**
Nitta, K., with others, photoelectric phenomena with copper phthalocyanine, **2428**
Niutta, A., a.f.c. in frequency-shift radiotelegraphy, **(D)2209**
Nixon, J. D., and P. C. Banbury, surface lifetime in Ge in electric fields, **3099**
Nixon, R. D., testing c.r. tubes, **1919**
de Nobel, D., and D. Hofman, dielectric constant of CdTe, **3790**
—— with C. J. van Doorn, luminescence and width of energy gap of CdTe, **3440**
—— with F. A. Kröger, preparation and electrical properties of CdTe single crystals, **145**
Noble, W. J., focusing effect in velocity gradient, **729**
Nomura, T., with M. Kimata, electroluminescence in ZnS, **3754**
Nomura, Y., and K. Takaku, propagation of e.m. waves in inhomogeneous atmosphere, **545**
Nordberg, W., with others, atmospheric temperatures and winds, **2376**
Norris, V. J., frequency-multiplier klystron, **2915**
Northrop, D. C., and O. Simpson, electronic properties of aromatic hydrocarbons, **2093**
Norton, K. A., point-to-point relaying via tropospheric scatter, **3185**
—— P. L. Rice and L. E. Vogler, propagation through turbulent atmosphere over irregular terrain, **242**
—— and others, probability distribution of constant vector plus Rayleigh-distributed vector, **197**, **234**; fading in propagation through turbulent atmosphere, **250**
Noton, A. R. M., with J. F. Coales, on-off servomechanism, **3222**
Nottebohm, H., noise in amplifier with negative feedback, **3009**
Notuki, M., Y. Nakagomi and M. Fukatsu, solar corona and geomagnetism, **2042**
Novikov, A. I., with others, Russian bibliography on telemetering, **869**
Novosil'tsev, N. S., O. I. Prokopalo and A. F. Yatsenko, fusion of $BaTiO_3$ by conduction, **2770**
Novozhenov, G. F., determining power of pulse generator, **211**
Noxon, J., with others, distribution of auroras in Alaska, **1722**
Nudelman, S., and F. Matossi, electroluminescence output of ZnS phosphors, **2410**
—— with F. Matossi, electroluminescence excited by pulses, **374**; electrophotoluminescence effects, **2763**

O

Oatley, C. W., with J. C. Firmin, effects of metal electrodes in electron-bombardment conductivity, **843**
—— with A. N. Ince, properties of electroluminescent phosphors, **782**
—— with K. C. A. Smith, scanning electron microscope, **1179**
Obayashi, H., with others, field strength of wave reflected from ionosphere, **900**
Obayashi, T., movements of irregularities in E region, **418**, **2051**
Oberhettinger, F., asymptotic series in diffraction theory, **2348**
Obi, C., almost-periodic solutions of nonlinear differential equations, **1480**
O'Brien, R. S., with W. B. Whalley, colour video switching, **2554**
Ochsenfeld, R., Fe-Ni alloys, mechanical damping in, **1783**, magneto-elastic properties of, **1785**
O'Connell, J., with L. J. Giacoletto, variable-capacitance junction diode, **2559**
O'Dell, T. H., three-terminal null networks, **3672**
O'Dwyer, M. T., with E. N. Farrar, R/T for control of works transport, **570**
Oetjen, R. A., with H. Yoshinaga, optical properties of InSb, **2118**
Ogata, Y., observation of ionospheric drift, **3730**
—— with others, F₂ layer multiple reflections, **894**; field strength of wave reflected from ionosphere, **900**
Ohl, G., 'frequency microscope', **3493**
—— with others, quartz clocks at the Physikalisch-Technische Bundesanstalt, **3468**
Ohl, R. S., with others, solid-state detector for low-energy ions, **2181**
Okada, J., dislocations along grain boundaries in Ge crystals, **1761**; effects of dislocations on minority-carrier lifetime in Ge, **2440**
Okada, K., with others, energy dissipation of conduction electrons, **3020**
Okada, S., node and mesh determinants, **44**
Okamura, T., H. Kojima and S. Watanabe, effects of Bi_2O_3 on ferrites, **832**
—— with others, Zeeman effect in NH_3 microwave spectra, **93**
Okashimo, K., with J. R. Wait, patterns of stub aerials, **2624**
Okaya, A., Stark-modulation mm-λ spectrograph, **1389**
Okazaki, S., and H. Oki, noise in Ge, **1454**
O'Keeffe, J., initial-value problem for wave equation, **2151**
Oki, H., with S. Okazaki, noise in Ge, **1454**
Okuda, T., with K. Yamamoto, floating-probe method for measurement of o ized gas, **2687**
Oldroyd, D. L., with others, Glasgow 340-MeV synchrotron, **538**
O'Leary, M. G., wide-band television aerials, **2295**
Oleson, N. L., with S. Watanabe, travelling density waves in positive columns, **714**
Olin, I. D., dielectric transformers for X-band waveguide, **666**
Oliphant, M. L., acceleration of protons, **2858**
Oliver, D. J., with others, photoelectromagnetic effect in InSb, **145**
Olver, F. W. J., asymptotic solution of linear differential equations, **3131**
Omholt, A., auroral E-layer ionization and luminosity, **119**; recombination in E layer during aurorae, **1413**; aurorae caused by angular dispersed protons, **3383**; secondary processes due to absorption of emission from aurorae, **3384**
—— and L. Harang, lifetime of ^1S state of oxygen atom in atmosphere, **1053**
O'Neill, G. D., space-charge-limited current between nonsymmetrical electrodes, **303**
O'Neill, G. K., storage-ring synchrotron, **3846**
Ono, K., with others, magnetic resonance in α-Fe_2O_3, **486**
Onoue, M., and others, transmission of microwaves over sea, **3861**
—— with others, discriminating disturbances in solar noise observation, **741**
Oomura, T., with S. Chikazumi, magnetic anistropy induced by annealing, **1459**
van Oosterhout, G. W., measuring ferromagnetic properties of small samples, **3143**
Orchard, H. J., rejector circuit, **(D)664**
Orhaug, T., with others, ionospheric observations during solar eclipse, **3379**
Orlov, Y., betatron oscillations in strong-focusing synchrotron, **2859**
O'Rourke, R. C., with A. W. Saenz, magnetic properties of electron gas, **1021**
Orthmann, H. J., with J. G. Helmcke, theory and technique of electron-microscope stereograms, **1183**
Osborne, B. W., chrominance circuits for colour-television receivers, **3231**
Oshchepkov, P. K., L. D. Rozenberg and Yu. B. Semennikov, electron-acoustic image converter, **2184**
Osherovich, A. L., with others, atmospheric ozone during solar eclipses, **2374**
Osipov, B. D., with others, electromechanical stabilizer for klystron frequency, **58**
Osmond, W. P., temperature-dependent resistivity of MgMn ferrites, **3456**
Osterberg, C., with others, atmospheric ozone as function of height, **3044**
Ostroborodova, V. V., and S. G. Kalashnikov, effect of heat treatment on Ge, **2104**; recombination at thermal acceptors in Ge, **2105**
Oswald, J., with M. D. Indjoudjian, sampling of valves for inspection, **2253**
Ota, M., and others, geomagnetic variations during solar eclipse, **2045**
Otter, F. A., Jr, P. J. Flanders and E. Klokholm, ferromagnetism in noble-metal alloys containing Mn, **175**
Otter, M., with others, single crystals with pure surfaces, **1140**
Ouweltjes, J. L., and W. L. Wanmaker, nonstoichiometry in oxygen-dominated phosphors, **3397**
Ovcharov, V. T., axially symmetrical electron beams, **2907**
Overhoff, G., printing results from computers, **1629**
Owen, G. E., with others, electron emission from superconductors, **3340**
Owen, J., with K. D. Bowers, paramagnetic resonance, **2139**
Owens, A. R., with G. B. B. Chaplin, junction-transistor scaling circuit, **3006**
—— with others, transistor digital fast multiplier, **1631**
Oyer, H. J., intelligibility of speech at ear and mouth, **1289**
Ozdogan, B., determination of ultrasonic wave pressure, **1940**
Ozhigov, I., with E. Kondorski, resistance of Fe-Ni alloys in magnetic field, **1777**

P

Paardekooper, H., push-button attenuator, **1003**
Pace, T. W., Marconi television centre, **1884**
Pachner, J., directivity pattern at distance from emitter, **1933**
Padel, S. H., with A. R. A. Rendall, Broadcasting House/Crystal Palace television link, **3891**
Paetzold, H. K., investigations on atmospheric ozone layer, **748**
—— and H. Zschörner, observation of 'ozone hole', **417**
Page, C. H., frequency conversion with positive nonlinear resistors, **2978**
Page, E. S., with B. H. Briggs, empirical study of random functions in interpretation of ionospheric movements, **755**
Page, R. M., R. W. Terhune and J. Hickmott, Jr, signal/noise ratios of photoconductive detectors, **2565**
Page, R. S., console-type electron microscope, **540**
Paine, T. O., L. I. Mendelsohn and F. E. Luborsky, effect of shape anisotropy on coercive force, **1460**

—— with others, permanent-magnet properties of elongated iron particles, **826**
Paivinen, J., with others, magnetic-core circuits for digital systems, **1313**
Palazzi, G. D., magnetic differential probe for synchrotron, **2849**
Palluel, P., developments of O-type carcinotrons, **3576**
—— and A. K. Goldberger, O-type carcinotron, **1904**
Palmer, D. R., with T. Gold, solar outburst, 23rd February 1956, **2715**
Palmer, H. P., with others, polarization measurements on radio sources, **3714**
Palmour, H., III, high-temperature metal/ceramic seals, **193**
Pan, W. Y., frequency characteristics of local oscillators, **593**
Pancholy, M., with others, ultrasonic output of quartz radiator, **311**
Panke, H., with H. Dziergwa, yellow luminescence due to titanium in magnesium silicate containing fluoride, **1066**
Pankove, J. I., revealing junctions in Ge crystals, **473**; transistor fabrication by melt-quench process, **1453**
Pannett, W. E., with E. Molloy, Radio and Television Engineers' Reference Book, **(B)1268**
Pappis, J., with others, magnetostriction and permeability of magnetite and Co-substituted magnetite, **494**
Paramonova, R., and A. Rzhanov, lifetime of excess current carriers, **2098**
Parfitt, G. D., with D. D. Eley, semiconductivity of organic substances, **1457**
Park, J. H., and H. N. Cones, breakdown of air in nonuniform field, **3024**
Parker, G. M., and R. W. Williams, magslip isograph, **334**
Parker, J. D., f.m. for British Forces network, **1213**
Parker, J. G., reflection from irregular surface, **3602**
Parker, W. N., and M. V. Hoover, gas tubes protect transmitters, **1235**
Parkhomenko, E. I., piezoelectric structure of quartz, **3083**
Parkinson, R. W., night-time lower ionosphere deduced from coupling phenomena, **1050**; fading periods of E region coupling echo, **2520**
—— with N. Davids, wave solutions for critical coupling in ionosphere, **1192**
Parmenter, R. H., energy levels of crystal modified by alloying or pressure, **839**; symmetry properties of energy bands of zinc-blende structure, **1138**
Parodi, M., stability criterion for analogue machines, **671**
Parr, J. C., with A. L. Cullen, perturbation method for measuring microwave fields, **519**
Parravano, G., with others, induced ferromagnetism by addition of Li ions to NiO, **2454**
Parry, J. V. L., with L. Essen, atomic and astronomical time, **2471**
Parsons, S. J., with J. S. Hey, radar measurement of low elevation angles, **2746**
Parsons, S. L., with others, beam-indexing 'apple' tube, **3893**
Parthasarathy, R., with G. Swarup, solar brightness distribution at 80 cm, **1707**
Parthasarathy, S., and V. Narasimhan, performance of quartz oscillator in liquids, **1602**
—— M. Pancholy and C. B. Tipnis, ultrasonic output of quartz radiator, **311**
Partin, M. E., with others, beam-indexing colour-television display system, **3893**
Parton, J. E., and G. D. Stairmand, magnetic flux probe, **1817**
Parygin, V. N., synchronization of oscillators with weak coupling, **3678**
Parzen, P., with M. Scotto, excitation of space-charge waves, **2912**
Paschke, F., theory of coupled space-charge waves, **619**
Päsler, H., use of computer 'GAMMA 3', **1629**
Pasynkov, V. V., semiconducting ignitors for ignitron rectifiers, **272**; effect of radioactive radiation on photocell, **2567**
Patalong, H., with A. Herlet, blocking properties of junction rectifiers, **2901**
Patchett, G. N., constant-voltage amplifier and oscillator, **913**
Patel, J. R., delay time of plastic flow in Ge, **2443**
Pateyuk, G. M., high-frequency discharge, **3026**
Patrushev, V. L., natural frequency of cavity with dielectric, **2657**; design of coaxial cavity resonator, **3669**
Patton, W. T., with others, ring array as skip-range aerial, **326**
Paul, R. J. A., short analogue computer, **2299**
Paul, W., with others, effect of pressure on n-type Ge, **1452**
Paulevé, J., ferromagnetic resonance of Gd ferrites, **183**
—— and B. Dreyfus, resonance of ferrites in circularly polarized field, **2456**
Pauling, L., and P. Pauling, valence and atomic size of Si etc. in alloys, **2798**
Pauling, P., with L. Pauling, valence and atomic size of Si etc. in alloys, **2798**
Paulsen, W. H., with others, detectability of clouds by 1·25-cm radar, **2749**
Paulus, M., with C. Guillaud, permeability and grain size of Mn-Zn ferrites, **3122**
—— with others, reduction of eddy-current losses in ferrites, **3457**
Pauthenet, R., properties of Gd ferrites, **2821**
—— with others, properties of yttrium ferrite, **3114**
Pavalow, M., with G. M. Davidson, potentiometer tachometer, **3841**
Pavel, E. A., transmission properties of low-frequency programme lines, **14**
—— with others, influence of delay distortion on quality of broadcasts, **266**
Pawsey, J. L., radio star scintillations due to ionospheric focusing, **755**
Paxton, W. S., and T. G. Nilan, domain configurations in grain-oriented Si steel, **169**
Peacock, N. J., with others, mechanism of breakdown in hydrogen, **387**
Peake, H. J., and N. Davy, field of cylindrical trough with plane conductor, **1018**
Pearce, A. F., with D. J. Wootton, klystron oscillator for 8–9 mm λ, **2579**
Pearce, C. A. R., permittivity of two-phase mixtures, **787**
Pearcey, T., with G. W. Hill, starting routines for C.S.I.R.O. computer, **669**
Pearlman, A. R., super-alpha composite transistors, **927**
Pearson, G. L., and W. H. Brattain, history of semiconductor research, **797**
—— H. C. Montgomery and W. L. Feldmann, noise in Si p-n-junction photocells, **1900**
Pearson, W. B., with E. Mooser, new semiconducting compounds, **2091**; chemical bond in semiconductors, **2781, 3422**
Pease, R. S., with G. H. Kinchin, displacement of atoms by radiation, **2034**
Peek, S. C., light source excited by radio frequency, **1837**
Pekar, S. I., theory of semiconductors and dielectrics, **3420**
—— with I. M. Lifshitz, equations of electrons at surface of crystal, **372**
Pell, L., with others, fast sweep circuit, **698**
Pellegrini, U., pulse scaler circuit, **3309**
Pender, J. T., electrical contacts, **3813**
Penfold, A. S., with B. M. Spicer, energy stability of 22-MeV betatron, **1176**
Penin, N. A., with S. G. Kalashnikov, influence of frequency on rectifying properties of semiconducting diodes, **1889**
Penning, P., annealing of Ge supersaturated with Ni, **3779**
Penton, W. A., sine-wave generator for very low frequencies, **223**
—— with others, frequency variations in New Zealand of transmissions from GBR, **1482**
Pepinsky, R., with H. R. Danner, specific heat anomaly of $Cd_2Nb_2O_7$, **449**
—— F. Jona and G. Shirane, ferroelectricity in alums, **3404**
—— with others, aspects of ferroelectricity, **785**; neutron analysis of tetragonal $BaTiO_3$, **1072**; diffraction study of $PbTiO_3$, **2771**
Pepping, F., with A. Schepp, portable R/T sets for railways, **1550**
Perakis, N., and others, induced ferromagnetism by addition of Li ions to NiO, **2454**
Pérard, A., standards of length and time, **2834**
Percival, W. S., graphs of active networks, **52**
Percy, J. N. B., with others, reproducing equipment for fine groove records, **2279**
Perel', V. I., with Yu. M. Kagan, theory of Langmuir probes, **1024**; mobility and space charge of ions in nonuniform field, **3335**
Peri, G., with others, thermoelectric effect of CuO, **3111**
Perkins, W. R., with D. McDonnell, stability of closed-loop pulsed radar circuits, **269**
Perlmutter, A., with others, infrared stimulation of photoconductivity in luminescent powders, **131**
Perrier, A. L., magnetogalvanic effects, **383**
Perrot, M., and others, thermoelectric effect of CuO, **3111**
Perry, F. R., with others, 20-MeV betatron for X-ray therapy, **876**
Persen, L. N., with J. Kestin, error function of complex argument, **2467**
Pershits, Ya. N., interface layers near electrodes in dielectrics, **448, 2125**
Perzley, W., precision digital delay generator, **864**
Peters, H., standardization of h.f. coaxial cables, **15**
Peters, J., phase pre-correction in television, **584**; approximation for low-pass filter using flow analogy, **1001**
Peters, R. W., with G. C. Tallhurst, effect of attenuating one channel of dichotic circuit, **3606**
Peters, W., new type of aerial insulator, **1618**
Peterson, A. M., and others, aspect-sensitive radio reflections from ionosphere, **1527**
—— with others, meteor ionization trails, in extended-range v.h.f. propagation, **236**, oblique reflections from, **3509**
Peterson, G. E., E. Sivertsen and D. L. Subrahmanyam, intelligibility of diphasic speech, **2942**
Petford, A. D., with B. V. Rollin, electrical properties of InSb at low temperatures, **145**
Petrie, D. P. R., with D. R. Chick, e.a. particle accelerator, **1838**
Peyssou, J., and J. Ladenbaus, temperature coefficient of ceramic-dielectric capacitors, **3136**
Pfann, W. G., temperature-gradient zone melting, **1142**
—— and D. W. Hagelbarger, e.m. suspension of molten zone, **1775**
Pfeffer, I., with R. H. Delano, effect of a.g.c. on radar tracking noise, **2747**
Pfeifer, H., influence of field inhomogeneity in nuclear resonance, **404**
Pfister, W., studies of refractive index in ionosphere, **755**
Phadke, K. R., atmospheric noise interference in 5-Mc/s band at Poona, **905**
—— with S. V. C. Aiya, atmospherics interference at Poona, **1202**
Philipp, E. O., frequency dividers with large ratio, **3003**
Phillips, G., with A. M. J. Mitchell, measurement by nuclear resonance of light-water concentration, **2502**
Phillips, G. J., diffuse ionospheric reflection of medium waves at night, **755**
—— and M. Spencer, effects of amplitude patterns in measurement of ionospheric drifts, **120**
Phillips, J., with others, infrared absorption of InSb, **2119**
Phillips, J. A., nine's-complement decade counter, **3312**
Phillips, K., with others, 20-MeV betatron for X-ray therapy, **876**
Phillips, M. L., ratio of steady signal to random noise, **2513**
Phylip-Jones, G., with R. S. Arbas, ferroresonant computing circuits, **2647**
Picht, J., calculation of field distribution with specified properties, **1361**
Pickin, J. R., with H. S. Cockroft, klystrons for high-power c.w. operation, **1588**
Piddington, J. H., hydromagnetic waves in ionized gas, **91**; four possible waves in magneto-ionic medium, **733**; growing e.m. waves, **2030**; growing space-charge waves, **2702**, and electron-wave valve, **2258**
—— and G. H. Trent, cosmic radio sources observed at 600 Mc/s, **2707**
Piech, T., with M. Jelewski, dielectric properties of $BaTiO_3$, **1740**
Piechatzek, H., with H. Hannemann, carrier-frequency installations, **2218**
Piefke, G., reflection at change in helix pitch, **322, 662**
Pielich, P., 3-dimensional radar simulator, **3071**
Pierce, E. T., design of lightning flash counters, **2069**
Pierce, J. R., propagation in arrays of parallel wires, **942**; physical sources of noise, **2308**
—— and L. R. Walker, growing waves due to transverse velocities, **1906**
Pierre, É., with others, photoelastic with alternating magnetic field, **1895**
Pigg, J. C., with others, neutron bombardment of p-type Ge, **468**
Piggott, W. R., ionospheric absorption at different stations, **1051**; measurement of f_0E at night, **1408**
—— with E. V. Appleton, storm phenomena and solar-cycle variations of F_2 layer, **755**
Pigott, M. T., Fe-Al alloys for magnetostrictive transducers, **3118**
Pikus, G. E., and Yu. A. Firsov, conference on theory of semiconductors, **3767**
Piloty, H., and others, computer at Munich (PERM), **1311**
Piloty, R., with others, computer at Munich (PERM), **1311**
Pilz, F., circuit technique for electrical test patterns, **2231**
Pineo, V. C., heights of ionospheric scattering of v.h.f. waves, **3521**
Pines, D., and C. P. Slichter, relaxation times in magnetic resonance, **1388**
—— with J. Bardeen, electron-phonon interaction in metals, **379**
Pinsker, Z. G., S. A. Semiletov and E. N. Belova, structure of $Tl_2Sb_2Se_4$, **2448**
Piper, W. W., with others, effect of electron traps on electroluminescence, **3755**
Pippin, J. B., frequency doubling and mixing in ferrites, **3301**
Pires de Carvalho, A. A., photomagnetoelectric effect in Ge, **2113**
Pisarevski, A. N., with A. R. Shul'man, temperature variations of work function of Ge, **2795**
Pistol'kors, A. A., Mathieu functions in computations of aerial fields, **2630**
—— with A. L. Mikaelyan, e.m. waves in magnetized ferrite, **20**
Pizer, H. I., J. G. Yates and K. F. Sander, electron-trajectory tracer, **3833**
Pizzarello, P. A., with L. H. DeVaux, elastic constants of InSb, **2802**
Plank, V. G., D. Atlas and W. H. Paulsen, detectability of clouds by 1·25-cm radar, **2749**
Plebański, J., with R. Kulikowski, optimum characteristics of linear pulse systems, **1327**
Pleasner, K. W., and R. West, $BaTiO_3$ with Si and Ge, **1737**
Ploke, M., with M. Keller, X-ray images made visible by television tube, **1901**
Plumlee, R. H., oxide cathode, electrolytic transport phenomena in, **3583**, donor centres in, **3586**
Plummer, A. R. F., excess current in Ge p-n junctions, **3433**
Plummer, C. B., television satellite systems, **2553**
Plyler, E. K., L. R. Blaine and W. S. Connor, velocity of light from molecular constants of CO, **69**
Plyutto, A. A., with others, resistance of metals at high current densities, **456**
Podolsky, B., and H. Dolman, generalized macroscopic electrodynamic equations, **2028**
Poeverlein, H., theory of diffraction of radio waves, **2875**; extended transmission ranges at m, dm and cm λ, **3860**
Pohl, W. J., mutual heating in transmitting valve filament structures, **2583**
Poincelot, P., diffraction problem, **89, 2700**; distribution of current along aerial, **980**; reflection of e.m. wave from ionized gas, **1189**, of radio signals by ionosphere, **3510**
Pokras, A. M., with L. B. Tartakovski, periscopic aerial system, **3646**
van der Pol, B., with others, Atlas of Ground Wave Propagation Curves for Frequencies between 30 Mc/s and 300 Mc/s, **(B)3201**
Polack, H., compensating recording capacitance bridge, **2171**
Polkovski, I. M., apparatus for protection of hearing, **965**
Pomerantz, M. A., R. A. Shatas and J. F. Marshall, conductivity induced in MgO crystals by electron bombardment, **158**
—— with others, dependence of secondary electron emission on angle of incidence of primaries, **3343**
Poole, K. M., emission from hollow cathodes, **628**
Pope, J. H., with others, the 'new' whistler, **2393**
Popert, P., with M. Sächs, spectra of modulated pulse trains, **1203**
Popkin-Clurman, J. R., colour-signal generator, **3834**
Pople, J. A., with A. D. Buckingham, dielectric constant of imperfect nonpolar gas, **378**
Popov, N. A., and N. A. Kartsev, discharge in frequency region between h.f. and v.h.f., **3025**
Popov, P., with others, radio literature in U.S.S.R., **2269**
Poral-Koshits, E. A., N. Ya. Kornak and G. O. Gemon, X-ray investigation of solid solutions of $BaTiO_3$–$PbZrO_3$, **1436**
Poritsky, H., transient fields from dipoles near ground, **1851**
Porter, C. S., with others, measurement of complex permeability and permittivity, **2845**
Portmann, P. A., with others, tropospheric propagation beyond horizon, **238**
Portnoy, W. M., with others, self-diffusion in Ge, **3429**
Pöschl, K., Mathematische Methoden in der Hochfrequenztechnik, **(B)2833**
—— with W. Klein, focusing electron beams by magnetic fields, **618**
—— with H. J. Linn, complex correlation coefficient, **2832**
Possener, M., and I. J. van Heerden, variation of cosmic-ray intensity near 1954 sunspot minimum, **2712**
Post, E. J., electromagnetic theory of moving matter, **1032**
—— and J. W. A. van der Scheer, bridge-stabilized oscillators, **2997**
Poté, A. J., with D. Davidson, over-horizon communications links, **910**
—— with others, u.h.f. long-range communication systems, **263**; folded unipole aerials, **1616**
Potter, G. X., synchronization of Greek radio-link system, **1207**
Potok, M. H. N., waveguide filters, **1991**
Potts, R. B., with E. W. Montroll, effects of defects on lattice vibrations, **1042**
Poulet, H., with others, optical spectrum of piezoelectric crystals, **1063**
Povarov, G. N., Russian bibliography on relay-contact circuits, **680**
Powell, R. C., with others, re-entrant cavity for measurement of complex permeability, **2848**
Powell, R. W., with others, conductivities of carbon, **2422**
Powell, W. B., improving characteristics of cyclotron beam, **3163**
Power, F. S., with D. A. McLean, Ta solid electrolytic capacitors, **2982**
Power, G., fields and stresses in dielectric media, **3019**; extension of circle and sphere theorems, **3688**
Powers, D. A., and T. Suita, pre-breakdown current and noise in insulators, **845**
Powles, J. G., radio-frequency physics, **3031**
Pozin, N. V., with others, Russian bibliography on telemetering, **869**
Prache, P. M., with B. Chiron, complex susceptibility of Mg ferrites, **2137**
Prasad, S. C., and W. A. Wooster, elastic constants, of Si, **152**, of Ge, **475**
Pratt, G. W., with others, beam indexing 'apple' tube, **3893**
Pratt, R. G., with J. C. E. Jennings, numerical ray tracing in electron lenses, **76**
Praxmarer, W., performance chart of magnetrons, **2910**
Prener, J. S., and F. E. Williams, associated donor-acceptor luminescent centres, **2405**
Pressey, B. G., and G. E. Ashwell, deviation of l.f. ground waves at coast-line, **3195**
—— G. E. Ashwell and C. S. Fowler, phase of l.f. ground wave propagated across coast-line, **3194**
Pressman, J., temperature changes in ozonosphere, **110**
—— with others, formation of lower ionosphere, **1407**
Preston, F. S., computer for solution of tangents, **2969**
Preston, G. W., cathode roughness and beam current density, **3580**
Preston, J., with others, miniature loudspeakers, **2277**
Preston, J. S., and G. W. Gordon-Smith, discontinuities in saturation curves of photocells, **609**
—— with others, study of gold films, **836**
Prévot, F., with G. Mongodin, experimental study of molecular pump, **2752**
—— with others, diffusion pump using freon 12, **3393**
Price, B. T., ionization by relativistic particles, **2018**
Price, P. J., semiconductors, ambipolar thermodiffusion of electrons and holes in, **1079**, transport effects in, **3766**
Price, R., with G. J. Stanley, radio emission of deuterium from galaxy, **3039**
Price, R. E., travelling disturbances in ionosphere, **755**
Pridmore-Brown, D. C., with U. Ingard, radiation from acoustic boundary layer, **1935**; scattering of sound by sound, **2939**
Prigent, H., with F. Cahen, telecontrol system on 175 c/s in France, **1187**
Prihar, Z., topological properties of telecommunication networks, **3212**
Prilezhaeva, I. N., with others, electron mirrors and observation of domains in ferromagnetic materials, **1794**
Primozich, P. G., E. R. Schatz and J. B. Woodford, tapered strip line for pulse transformer, **993**
Prince, E., neutron-diffraction observation of heat treatment in Co ferrite, **3452**
Prince, M. B., diffused p-n junction Si rectifiers, **3225**
Pringle, D. H., and E. M. Bradley, microwave control valves employing negative glow discharge, **1599**
Pritchard, A. G., with others, detection of S_q current system in ionosphere, **1049**
Pritchard, R. L., analysis of common-base transistor circuit, **(D)1012**; h.f. power gain of junction transistors, **3566**
Proebster, W. E., parallel adding mechanism of PERM, **1629**
—— with others, computer at Munich (PERM), **1311**
Prokhorov, A. M., with N. G. Basov, methods of obtaining active molecules for molecular generator, **402**; molecular-beam oscillator and amplifier, **3709**
Prokocimer, B., with A. Chevallier, isolating direct-current amplifiers, **3316**
—— with others, recording r.f. interference, **3488**
Prokopalo, O. I., with others, fusion of $BaTiO_3$ by conduction, **2770**
Prokott, E., transmission tests beyond optical range, **248**
Proskurnin, M. A., with others, polarization of Rochelle salt exposed to radioactive irradiation, **143**
Prothe, W. C., with others, detection of signals by human and electronic detector, **3609**
Proud, J. M., P. Tamarkin and E. T. Kornhauser, propagation of sound pulses in dispersive medium, **1931**
Prowse, W. A., and P. E. Lane, breakdown of gases in crossed fields, **2024**
Prugh, T. A., with C. W. Duricux, microphonism due to transistor leads, **3246**
Ptushinski, Yu. G., with N. D. Morgulis, diffusion of impurity atoms in oxide cathode, **1914**
Puff, H., with R. Juza, ferrimagnetism of Mn_4N, **3799**
Pugh, E. M., with P. E. Allison, temperature dependence of Hall coefficients in Cu-Ni alloys, **3801**
Pugh, R. E., with others, dependence of meteoric forward-scattering on aerial patterns, **1198**
Pujolle, J., acoustic insulation of heavy structures, **3616**; broadcasting studies at Marseilles, **3625**
Pumper, E. Ya., with V. L. Bonch-Bruevich, I^2/I characteristic of p-n junction, **2427**
Pupke, H., and H. G. Thom, rotation of plasmoids in magnetic field, **2021**
Puri, S. P., and P. S. Gill, analysis of spuriousness of G-M tubes, **2511**
Puro, W. O., with others, artificial dielectrics with voids, **1437**
Pusch, G., with H. Groll, cavity-resonator frequency meter, **219**
Putley, E. H., apparatus for recording temperature variation of Hall coefficient, **3155**
—— with others, preparation, electrical and optical properties of Mg_2Sn, **145**
Pütter, P. S., measurement of ionospheric wind from drift velocity of surface condition, **755**
Puzhai, A. N., Ge diodes, **3239**
Pyatt, E. C., vectorial display of alternating voltages, **1826**
Pyka, M., with others, deriving geomagnetic dipole-field coordinates from cosmic-ray observations, **2371**
Pyle, M. O., with others, colour-television-receiver design, **188**

Q

Quarrington, J. E., with V. Roberts, measurements of absorption in InSb and GaSb, **148**
Quate, C. F., with others, coupled helices, **1612**
Queck, U., with E. Schröfer, determination of attenuation of coaxial cables, **2481**

R

Rabenhorst, H., determination of dielectric properties from Brewster angle, **208**
Rabinowitz, J., with others, encoding colour for telecasting, **588**
Radcliffe, J. M., lattice scattering in homopolar semiconductors, **148**
Rademacher, K., and K. Wojaczek, cathode fall in glow discharge, **2358**
Radford, W. H., with others, u.h.f. long-range communication systems, **263**

Ruether, H., with J. Lohff, electron emission from metal surfaces, **1027**
Raev, A., I. Uzunov and A. Angelov, self-sustained electronic spokes in magnetrons, **1587**
Ragan, G. L., with others, 300-MeV electron synchrotron, **874**
Rajaraman, V., with N. S. Nagaraja, effect of component tolerances in selective amplifiers, **3682**
Rajchman, J. A., and A. W. Lo, transfluxor, **1637**
Rakshit, H., and S. D. Chatterjee, measurement of ionospheric heights, **754**
—— and M. C. Mallik, frequency of *RC*-coupled oscillator, **1998**
—— and S. C. Mukherjee, frequency of coincidence of two sets of pulses, **902**
Rambke, K., with A. Deubner, conductivity of thin Ag films, **3763**
Rambo, W. R., with J. L. Confalone, radar a.f.c. system uses mechanical tuning, **2075**
Ramm, C. A., R. F. Coe and T. B. Vaughan, injection phenomena in proton synchrotron, **2860**
Ramsey, N. F., resonance transitions induced by perturbations at two frequencies, **1386**
Rank, D. H., H. E. Bennett and J. M. Bennett, velocity of light, **1352**
Ransom, P., and F. W. G. Rose, trap activation energies in *n*-type Ge, **3432**
Rao, B. R., with M. S. Rao, long period fading in m.f. signals, **249**
Rao, B. V., with S. K. Chatterjee, artificial dielectrics at microwave frequencies, **1385**
Rao, M. S., and B. R. Rao, long period fading in m.f. signals, **249**
Rao, R. V. G. S., with N. S. Nampoothiry, X-ray studies of mica, **3816**
Rao, S. K. L., vibrations of triangular membranes, **2598**
Rao, S. R., with M. V. J. Row, wobbling of audio note due to rotating target, **3268**
Rapoport, Z. Ts., orientation of aerial of ionospheric station, **3511**
Rappaport, P., J. J. Loferski and E. G. Linder, electron-voltaic effect in *p-n* junctions, **2437**
—— with others, photovoltaic effect in GaAs *p-n* junctions, **2566**
Rase, D. E., and R. Roy, phase equilibria in $BaTiO_3$-SiO_2, **1435**
Rashba, E. I., *V-I* characteristic of *n-p* junction, **2775**
—— and R. B. Tolpygo, *V-I* characteristic at *n-p* barrier layer, **2122**
Rasmussen, A. L., A. W. Enfield and A. Hess, design of r.f. permeameter, **3482**
Rastogi, R. G., development of E_2 layer at Ahmedabad, **3373**
Ratcliffe, J. A., ionosphere, irregularities and horizontal movements in, **755**, scattering from irregularities in, **755**, movements in, **1709**, formation of F_1 and F_2 layers in, **2725**
—— and others, production and loss of electrons in ionosphere, **2724**
Rathenau, G. W., and J. F. Fast, initial permeabilities of sintered ferrites, **2136**
Rau, K. L., with H. Katz, generation of harmonics, **61**
Rau, R. R., and M. E. Caspari, Faraday effect in Ge, **1098**
Raub, E., with A. Kussmann, ferromagnetic and antiferromagnetic properties of Au-Mn, **2450**
Rauch, S. E., with L. J. Johnson, magnetic-amplifier systems for servos, **3014**
von Rautenfeld, F., with E. Belger, required interference protection ratios for medium-wave transmitters, **1863**; shared-channel operation with frequency offset, **1869**
Ravenscroft, I. A., and R. W. White, frequency modulator for radio relay systems, **286**
Rawcliffe, J., oscillating-electrode voltmeters, **2489**
Rawer, K., information on F_2 layer from ionization maps, **755**; accuracy of 'Sonne' (consol) system, **760**; ionospheric absorption, **1417**; irregularity and regularity of sporadic E layer, **2379**; focusing by 'rippled' ionosphere, **2872**
—— with others, observations of ionospheric movements, **755**
Rawls, L. E., with others, experimental on-channel satellite booster system, **2553**
Ray, S., with A. K. Saha, features of E_1 layer at Calcutta, **112**
—— with others, ionosphere during solar eclipse, **2732**
Rayner, G. H., and L. H. Ford, effect of humidity on stability of inductance standards, **2472**
Rayton, W. M., with others, ionospheric effects at v.h.f. and u.h.f., **3519**
Reber, G., world-wide spread F, **3374**
—— and G. R. Ellis, cosmic r.f. radiation near 1 Mc/s, **2269**
Redden, M. S., Jr., and H. W. Zaneanata, telemetering receiver conserves bandwidth, **2526**
Redfield, D., recombination in Te, **1430**
Rediker, R. H., with J. E. Thomas, Jr, surface recombination velocity in Ge, **2441**
Reed, R. D. C., with L. E. Lawley, absorption of ultrasonics in liquids, **1603**
Reeves, R. J. D., voltage-coincidence oscilloscope, **1164**; klystron control system, **3068**
Regel', A. R., and M. S. Sominski, effect of impurities on conduction mechanism of AlSb, **1106**
—— with N. P. Mokrovski, temperature dependence of conductivity of liquid Te-Se, **3419**
Reggia, F., with others, microwave measurements on ferrite spheres, **2846**
Rehfuss, D. E., with others, disintegration of Ge[68], **3784**
Reich, K. H., ferromagnetic resonance, permeability of iron near, **2134**, absorption in Ni crystal due to, **2818**
—— with K. J. Standley, ferromagnetic resonance in Ni and its alloys, **829**
Reichard, W. C., wide-range frequency meter, **1497**
Reichardt, W., acoustics of the Berlin State Opera House, **3623**
—— H. Kohlsdorf and H. Mutscher, optimum reverberation time for studios, **10**
Reid, J. H., with M. A. Ellison, long wave anomaly on 23rd February 1956, **2716**
Reikhrudel', E. M., G. V. Smirnitskaya and A. I. Borisenko, ionic pumps with cold electrodes, **3748**
Reina, F. Moyano. See Moyano Reina, F.
Reinov, N. M., with others, photomagnetoelectric effect in Cu_2O at low temperatures, **872**
Reise, H. A., hard-tube pulsers for radar, **3307**
Reiss, H., *p-n*-junction theory, **3087**
—— and C. S. Fuller, solubility of Li in B-doped Si, **2787**
—— C. S. Fuller and F. J. Morin, chemical interactions among defects in Ge and Si, **3092**
Reiss, K. H., emission of light from gas discharges, **766**
Reiss, R., with S. Nikitine, spectra of semiconductors, **2099**
Reissner, E., vibrations of shallow spherical shells, **1271**
Reiter, R., annual variations of atmospherics, **2391**
Remeika, J. P., and W. J. Merz, guanidine vanadium sulphate hexahydrate, **2772**
—— with others, guanidine aluminium sulphate hexahydrate, **2415**
Remizov, A. N., dependence of magnetic viscosity on dimensions of specimens, **728**
Rendall, A. R. A., and S. H. Padel, Broadcasting House/Crystal Palace television link, **3891**
Renwick, W., design of computer circuits, **3654**
Ressler, H. C., with others, multipath simulator tests communications, **3191**
Reuter, B., with R. Stein, photo-effect in PbS, **3249**
Rexer, E. F., with others, oxide-impregnated Ni-matrix cathode, **626**
Reynolds, G. A., with others, experimental on-channel satellite booster system, **2553**
Reynolds, S. I., noise between metals and dielectrics, **3817**
Reyzlin, A. S., with A. M. Strashkevich, electron-optical action of grid systems, **634**
Rheinfurth, M., errors of cylindrical electron-optical lenses, **1181**
Rhinehart, W. A., and D. J. Zaffarano, pulse-height measurement, **2844**
Rice, M. L., with M. Rigby, bibliography on ionospheric propagation, **1195**
Rice, P. L., and F. T. Daniel, transmission loss as distance and aerial height, **1531**
—— with others, propagation through turbulent atmosphere, over irregular terrain, **242**, fading in, **250**
Rich, D. J., with P. A. Rizzi, sidebands produced by ferrite modulators, **2005**
Rich, G. J., launching plane surface wave, **(D)320**
Richards, D. L., and R. B. Archbold, development of Collard principle of articulation calculation, **3873**
Richards, J. C. S., portable radiation detector, **536**; differential amplifier, **3011**
Richards, L. E., with others, resistivity of vitreous ternary lead silicates, **2827**
Richardson, E. G., industrial applications of ultrasonics, **1832**
—— with J. Busby, propagation of ultrasonics in suspensions, **2274**
Richardson, J. T., and W. O. Milligan, magnetic properties of NiO, **3798**
Richmond, J. H., measurement of time-quadrature components of microwave signals, **2169**
—— and T. E. Tice, probes for microwave measurements, **2170**
Richter, H., with E. W. Fischer, structural changes in Ge films, **811**
Rickayzen, G., validity of hydrogen-like approximation for impurity levels, **145**
—— with others, photoelectromagnetic effect in InSb, **145**
Riddell, R. J., Jr, with others, dynamics of ionized media, **2361**
Riddle, C., photoelectric a.g.c., **3160**
Riddle, F. M., temperature-stable transistor oscillator, **2342**
Riddoch, A., with J. H. Leck, cold-cathode ionization gauge, **3073**
Rideout, V. C., Active Networks, **(B)65**
—— and others, timing device and nonlinear units for differential analyser, **2637**
—— with others, high-speed electronic differential analyser, **24**
Rieder, W., with K. Millian, contact resistance and surface of contact, **2461**
Riesen, D. E., with C. T. Morrow, shock spectrum computer, **1969**
Riéty, P., theory of gold-leaf thermophone, **657**
Rigaux, C., and J. M. Thuillier, negative magnetoresistance effect in semiconductors, **3413**
—— with others, thermomagnetoelectric effects in InSb, **2120**
Rigby, M., and M. L. Rice, bibliography on ionospheric propagation, **1195**
Rigby, S., analogue-to-digital converter, **1009**
Rikitake, T., with others, effect of solar eclipse on ionosphere, **1716**
Rimbert, F., demagnetization of magnetite by alternating fields, **2130**
Rimondi, O., with others, fast sweep circuit, **698**
Rimski-Korsakov, A. V., nonlinear distortion of nonperiodic signal in electroacoustic path, **314**, audibility of, **3274**; design of ribbon microphone, **971**
Rindfleisch, H., 'Wullenwever' direction-finding installation, **3066**
—— with others, influence of delay distortion on quality of broadcasts, **266**
Ring, R. M., with T. J. Carroll, propagation in normally stratified troposphere, **240**
Ringoen, R. M., v.h.f. trans-horizon communication system, **3185**
—— and J. W. Smith, v.h.f. trans-horizon communication techniques, **2532**
Ritchie, R. H., with others, electron energy losses in metallic foils, **1364**
Rittner, E. S., simultaneous transport of heavy and light holes in semiconductors, **2425**
Rivet, P., diversity tests on long line-of-sight radio links, **2210**
Rizzi, P. A., and D. J. Rich, sidebands produced by ferrite modulators, **2005**
Roach, F. E., with others, photometric unit for airglow and aurora, **3043**
Roach, W. T., with R. M. Goody, distribution of ozone from emission spectra, **3726**
Robert, J., with others, thermoelectric effect of CuO, **3111**
Roberts, B. W., with J. S. Kasper, magnetic structure of Mn, **2127**
Roberts, J. A., with J. P. Wild, spectrum of radio-star scintillations and irregularities in ionosphere, **2058**
Roberts, L. D., R. B. Murray and J. W. T. Dabbs, crystalline fields and antiferromagnetic transitions, **1370**
Roberts, L. M., and S. J. Fray, theory for solid-backed bolometers, **2857**
Roberts, N. H., with others, anomalous polarization in $BaTiO_3$, **3400**
Roberts, R. W., and R. I. Van Nice, i.d./o.d. ratio of toroidal cores, **996**
Roberts, V., and J. E. Quarrington, measurements of absorption in InSb and GaSb, **145**
—— with others, preparation, electrical and optical properties of Mg-Sn, **145**
Robey, D. H., radiation impedance, of array of cylinders, **3**, of liquid-filled cylinder, **4**; variable resonant transducer, **3599**
Robinson, D. W., and R. S. Dadson, re-determination of equal-loudness relations, **3271**
Robinson, F. N. H., travelling-wave valves, **2572**
—— and H. A. Haus, analysis of noise in electron beams, **1593**
Robinson, P., with P. Brocklesby, long-distance v.h.f. radio link, **3879**
Roch, R., and J. Bouzitat, influence of splicing on cable impedance, **1951**
Roche, J. F., with others, tropospheric propagation beyond horizon, **238**; ionospheric propagation at frequencies exceeding m.u.f., **245**
Rodak, M. I., thermal motion of electrons in two-beam amplifier, **1250**
Rodbell, D. S., and C. P. Bean, reversal of magnetization in tapes, **1126**
Rodby, S. E., with M. E. Williamson, low-power telecasting, **1568**
Rodionov, S. F., and E. D. Sholokhova, sky brightness during solar eclipse, **1705**
—— with others, atmospheric ozone during solar eclipses, **2374**
Rodot, H., with others, preparation and effective masses for InSb, **3108**
Rodot, M., magneto-thermoelectric effect in semiconductors, **3772**
—— and others, preparation and effective masses for InSb, **3108**
Roessler, E., long-range long-wave radio navigation, **761**
Rogers, G. L., analysing ionospheric movement records, **2050**
Rogers, J. L., with W. G. Henry, magnetic susceptibility of diamagnetic alloys, **2824**
Rogers, P. S., with others, high-power demountable klystron for X band, **944**
Rogers, T. F., with others, v.h.f. tropospheric overwater measurements far beyond horizon, **234**
Rohan, P., and J. Weisblitzer, compensation of wide-band amplifiers, **1010**
Röhler, R., electron emission after glow discharges, **391**
Roi, N. A., electrostrictive and elastic properties of $BaTiO_3$, **1075**; coercive force of $BaTiO_3$ and mechanical strains, **2086**; properties of $BaTiO_3$ solid solutions, **3407**
Roig, J., with others, photodiode with alternating magnetic field, **1895**
Rolfe, J., base thickness of alloy-junction transistors, **2902**
Rollin, B. V., and A. D. Petford, electrical properties of InSb at low temperatures, **145**
Romanowski, M., with J. T. Henderson, standard of mutual inductance, **1830**
—— and P. A. Fraser, primary winding of Campbell standard inductor, **1831**
Romer, R. H., and R. H. Dicke, technique for microwave spectroscopy, **92**
—— with R. H. Dicke, pulse techniques in microwave spectroscopy, **1037**
Ronchi, L., and G. Toraldo di Francia, angular momentum of field in waveguide, **18**
Roof, R. B., with others, ionospheric effects at v.h.f. and u.h.f., **3519**
Rooksby, H. P., structure of oxide cathodes, **625**
Roop, R. W., with others, design and performance of e.s. loudspeaker, **1298**
Roorda, J., amplifier with monotonically rising step response, **1340**
van Roosbroeck, W., photomagnetoelectric effect in semiconductors, **2780**
Roquet, R., with M. Bayard, arithmetical characterization of messages, **2531**
Rose, A., performance of photoconductors, **768**
Rose, D. C., with others, effective geomagnetic equator, **3721**
Rose, D. J., resolution of field-emission electron microscope, **2504**
Rose, F. W. G., and D. J. Sandiford, hole lifetime in *n*-type semiconductor, **1080**
—— with P. Ransom, trap activation energies in *n*-type Ge, **3432**
Rose, H. J., with D. Kamke, carrier density in plasma, **3336**
Rosenbrock, H. H., obtaining transient response from frequency response, **337**
Rosenfeld, J. L., with others, beam formation with Pierce-type guns, **2581**
Rosenthal, J. E., storage light amplifier, **932**
Roser, F. X., large-area scintillation counters, **887**
Ross, A., and L. Simon, gate selects pulses for analysis, **3313**
Ross, H. McG., with E. Grundy, design and applications of digital computers, **1630**
Ross, I. M., and E. W. Saker, applications of InSb, **145**
—— with G. C. Dacey, field-effect transistor, **1240**
—— with J. L. Moll, transistor parameters and base-layer resistivity, **1244**
Ross, L. W., accuracy of solar flare observations, **1398**
Ross, W. J., with H. A. Whale, automatic direction finder for recording rapid fluctuations, **2744**
Rostoker, N., with J. J. Brophy, Hall-effect noise, **1101**
—— with H. Ekstein, quantum theory of fluctuations, **1350**
Rostoker, W., with S. Spachner, loss of texture in Ni-Fe alloy tapes, **483**
Roth, K. W., with C. D. Ellyett, radar determination of meteor showers, **739**
Roth, R. S., and L. W. Coughanour, phase equilibrium relations in systems titania-niobia and zirconia-niobia, **844**
—— with others, dielectric properties in system MgO-CaO-SnO_2-TiO_2, **191**; properties of piezoelectric ceramics, **1073**
Rothe, H., and W. Dahlke, theory of noisy fourpoles, **2665**
Rotkiewicz, W., alignment problems in superheterodyne receivers, **3866**
Rottgardt, K. H. J., and W. Berthold, sticking potential of c.r.-tube screens, **637**; properties of luminescent screens under electron bombardment, **3592**
Roubine, É., with others, Faraday effect in plasma, **732**
Rous, R. F., pulse-time-modulation terminals for music transmission, **2534**
Rouse, J. L., with others, variable-energy cyclotron, **229**
Rout, E. R., with others, suppressed-frame system of telerecording, **918**
Rouvina, J., with others, 300-MeV electron synchrotron, **874**
Row, M. V. J., and S. R. Rao, wobbling of audio note due to rotating target, **3268**
Rowden, R. A., television coverage of Gt Britain, **285**
—— with others, Crystal Palace television station, **3895**
Rowe, E. G., P. Welch, and W. W. Wright, valves of improved quality for government and industrial purposes, **(D)617**
Rowe, H. E., with J. M. Manley, properties of nonlinear elements, **2988**
Rowe, J. E., design of large-signal travelling-wave amplifiers, **1589, 2911**
—— and G. Hok, backward waves, **3577**
Rowlands, R. O., equivalent equalizer networks, **354**; by-pass filters, **3673**
Roy, J. M., correlation between f_0F_2 and sunspot number, **2059**
Roy, R., and J. K. D. Verma, polarization of e.m. waves in ionosphere, **1526**
—— with D. E. Rase, phase equilibria in $BaTiO_3$-SiO_2, **1435**
—— with J. K. D. Verma, polarization of echoes from ionosphere, **2384**
Royce, W. G., and W. D. Mathews, d.c. decade amplifier, **3318**
Rozenberg, L. D., with others, electron-acoustic image converter, **2184**
Rozenblat, M. A., magnetic amplifiers with low sensitivity threshold, **2673**
Ruelle, U., ladder networks, **43**
Rühl, H., raising cut-off frequency of transistors, **1345**
Rumsey, V. H., with R. Justice, measurement of electric field distributions, **2843**
Rumsh, M. A., with others, photo-e.m.f. of PbS photocells, **3251**
Rumyantsev, A. P., with A. R. Shul'man, thermionic emission properties of ThO and Th, **3259**
Runcorn, S. K., conductivity of earth's mantle, **743**
Ruppel, W., amplifiers for very low frequencies, **1341**
—— with G. Lautz, resistance variation of Ge in magnetic field, **2796**
Ruppersberg, H. K., with H. Lueg, dielectric constants of very small amounts of material, **2160**
Ruppert, F. W., and J. M. Smith, airborne weather radar, **1426**
Russell, G. H., future of European broadcasting, **909**
Rust, N. M., long-distance propagation of 18-kc/s waves, **3193**
Rutter, J. W., with W. A. Tiller, effect of growth conditions on solidification of binary alloy, **2146**
—— with others, mathematical analysis of solute redistribution, **1758**; growth twins in Ge, **3101**
Ryftin, Yu. A., resolution by television transmitting tubes with energy storage, **3547**
Ryle, M., radio stars, **405**
Rynn, N., with G. Wade, coupled helices in travelling-wave valves, **1253**
Rytov, S. M., fluctuations in self-oscillating systems, **1996**; e.m. properties of medium comprising thin layers, **2613**
Ryvkin, S. M., and R. V. Khar'yuzov, mobility of carriers injected by light, **1082**
—— with T. V. Mashovets, effect of heat treatment on lifetime of carriers in Ge, **2794**
—— with others, photoelectric properties of compounds with zinc-blende structure, **2779**
Rzhanov, A., with R. Paramonova, lifetime of excess current carriers, **2098**

S

Sabin, G. A., transducer calibration by impedance measurements, **3600**
Sabine, H. J., measuring air-flow resistance of acoustic materials, **2275**
Sacasa, R. Gea. See Gea Sacasa, R.
Sacco, L., radio link under conditions of superrefraction, **2200**
Sacerdote, C. B., with G. Sacerdote, measurement of directivity factor, **2950**
Sacerdote, G., and C. B. Sacerdote, measurement of directivity factor, **2950**
Sackett, W. T., Jr, short-term life ratings on resistors, **2316**
Sadashige, K., and B. F. Melchionni, control of light in television projectors, **589**
Sadowsky, M., with others, beam-indexing 'apple' tube, **3893**
Sáenz, A. W., and R. C. O'Rourke, magnetic properties of electron gas, **1021**
Sagar, F. H., fluctuations of 14.5-kc/s pulses from source in sea, **1277**
Sagel, K., resistance of joints in copper cables, **973**
—— with A. Munster, electrical properties of TiN and TiC, **2447**
Saha, A. K., and S. Ray, features of E_1 layer at Calcutta, **112**
—— and others, ionosphere during solar eclipse, **2732**
Saito, S., and K. Kurokawa, measuring dielectric properties in microwave region, **1156**
Saker, E. W., with I. M. Ross, applications of InSb, **145**
Salleo, R. P., and E. L. Key, designing *RC* active filters, **2662**
Salmon, J., theory of high-frequency discharge, **2357**
Saloom, J. A., with others, positive-ion drainage in electron beams, **623**; beam formation with Pierce-type guns, **2581**
Salow, H., and W. v. Münch, switching transistor, **3244**
Salpeter, J. L., concept of hole in semiconductors, **1746**
Salzer, H. E., formulae for inverse osculatory interpolation, **2154**; aerial pattern synthesis, **3645**
Samarski, A. A., with A. N. Tikhonov, magnetization of cylinder by coil, **3697**
Samoilovich, A. G., and M. I. Klinger, theory of semiconductors with impurity band, **3416**
—— and L. L. Korenblit, degeneracy of electron gas in semiconductors, **2426**
Samorodov, Yu. D., with V. M. Lopukhin, graphical method for investigating travelling-wave valves, **2256**
Sampath, S., with others, timing device and nonlinear units for differential analyser, **2637**
Sampson, J., with others, double-parabolic cylinder aerial, **985**
Samuels, J. C., cathode-follower phase-shift oscillator, **1005**
Samulon, H. A., video measurements using transient techniques, **2474**
Sanamyan, V. A., and G. A. Erznkanyan, r.f. emission from sun during eclipse, **2370**
Sánchez, M., and F. Popert, spectra of modulated pulse trains, **1203**
Sánchez-Cordovés, J., I. Miró and E. Gavilan, plan for television in Spain, **2230**
Sandel, T. T., and others, localization of sound sources, **649**
Sander, A., circular waveguides with coaxial-line input and output, **2292**
Sander, K. F., with others, electron-trajectory tracer, **3833**
Sandiford, D. J., with F. W. G. Rose, hole lifetime in *n*-type semiconductor, **1080**
Sandjivy, H., with J. Bourseau, coupling impedance and cable screens, **1950**
Sandretto, P. C., coordinated system concept of air navigation, **3386**; development of Tacan, **3386**
Sands, A. G., with others, wide-band absorbing materials, **1470**
Sands, R. H., paramagnetic resonance absorption in glass, **502**
Sanford, E. E., with others, colour-television-receiver design, **1881**
Sann, K., with others, vacuum-plating equipment for quartz crystals, **503**
van Santen, J. G., with others, solid-state image intensifiers, **1897**
Sargent, D. J., with G. H. Metson, electron bombardment of valve envelope, **2588**
Sarkar, A. B., with H. J. Leak, e.s. loudspeakers, **3627**
Sassier, M., Ge power rectifiers, **2886**
Sato, K., and others, travelling-wave valves for 4-kMc/s band, **2576**

Sato, M., and Y. Tino, magnetic anisotropy energy of Ni and Ni-Co alloys, **2453**

Sato, T., anomalous variations in F₁ and E regions, **2053**

Sauber, J. W., square-law detector for r.m.s. voltages, **528**

Saunders, J. H., with M. H. Hirsch, resonance widths in Ni-Co ferrites, **3119**

Sauze, A., with others, thermoelectric effect of CuO, **3111**

Savelli, M., with others, stationary random functions, **3467**; square-law detection of background noise, **3524**

Savinov, V. P., with others, electrical properties of ZnTe, **3439**

Sawada, K., with I. Kasaya, f_oF_2 at observatories in Japan, **3052**

Sawada, S., with others, thermal transition of transparency in $BaTiO_3$, **451**

Sawamoto, K., with E. Yamaka, photo-induced Hall effect in MgO, **2115**

Sawazaki, N., and T. Hosina, microwave repeater system using travelling-wave valves, **1212**

Sawner, M. L., with others, spectral energy distribution of ZnS-Ag and ZnCdS-Ag, **2762**

Sawyer, B., with D. C. Bennett, single crystals produced by zone levelling, **3102**

Saxon, D. S., tensor scattering matrix for e.m. field, **1690**

Saxon, G., electron beam loading in linear accelerators, **230**

Saxton, J. A., with others, v.h.f. propagation by ionospheric scattering, **1860**

Sayasov, Yu. S., with A. S. Kompaneets, almost conical e.m. resonators, **1640**

Sayled, A. M., with B. D. Nag, theory of Čerenkov effect, **3700**

Sbitnikova, I. S., with others, deposition of domains of ferromagnetic material, **1793**

Scaife, B. K. P., molecular theory of electrostriction, **2353**

Scarborough, H. B., Taran grained beacon AN/URN-3, **3386**

Schacher, D., with others, encoding colour for telecasting, **588**

Schade, O. H., image gradation in television, **1570**

Schaffeld, W., and H. Bayer, propagation in circular waveguides near cut-off, **2619**

Schäfke, F. W., with J. Meixner, Mathieusche Funktionen und Sphäroidfunktionen, **(B)511**

Schagen, P., stereoscopic television camera tube, **1229**

Schatz, E. R., with others, tapered strip line for pulse transformer, **993**

Schechter, D., with W. Kohn, theory of acceptor levels in Ge, **808**

Scheer, G. H., reliability in electronic equipment, **2595**

van der Scheer, J. W. A., with E. J. Post, bridge-stabilized oscillators, **2997**

Scheffler, E., and U. Quack, determination of attenuation of coaxial cables, **2481**

Scheibe, A., and others, quartz clocks at the Physikalisch-Technische Bundesanstalt, **3468**

Schelkunoff, S. A., representation of e.m. fields in cavities, **686**

Schenkel, H., and H. Statz, junction transistors with $\alpha > 1$, **1893**

Schepp, A., and F. Pepping, portable R/T sets for railways, **1550**

Schering, H., mean geometrical distances of circle, **2953**

Scherrer, P., with others, dielectric properties of ice, **377**

Schiesser, H., bindgraphers with spherical radiation, **1988**

Schilling, H., transformer design on insertion loss principle, **338**

Schimmel, F. M., with F. Brunn, theory of autodyne detector, **1664**

Schimmel, N., with others, shore-based radio aids, **1055**; remark beacon for use with marine radars, **1056**

Schimpf, L. G., with J. G. Linvill, design of tetrode transistor amplifiers, **3684**

Schirmer, H., conductivity of plasma, **382**; thermal conductivity of plasma, **1029**

Schittenhelm, R., 15 MeV betatron for nondestructive testing, **877**

Schlesinger, K., post-acceleration and e.s. deflection, **2591**; television sweep generation, **2893**; sampling detector for intercarrier TV sound, **3551**

Schlicke, H. M., cascaded feed-through capacitors, **2323**

Schlosser, E. G., and S. Gotze, d.c. amplifier with asymmetrically earthed input, **2004**

Schmerling, E. R., and J. O. Thomas, distribution of electrons in undisturbed F_2 layer, **2726**

—— with others, production and loss of electrons in ionosphere, **2724**

Schmid, K., with others, microwave television radio relay, **2546**

Schmidt, A., with F. Eckart, Se rectifiers with various impurities, **271**

Schmidt, H. J., 21-Mc/s local television network, **3541**

Schmidt, P. W., tables of $\int_0^x J_0(t)dt$, **2152**

Schmidt, W., hypertrofic field tube for multiplication, **2924**

Schneeberger, R. J., area sources of low-energy electrons, **3173**

Schneider, H., portable scintillation counter, **888**; determination of wave fields by means of *LC* networks, **2491**; intelligibility of amplitude-limited speech, **3614**

Schöfer, R., with W. Heywang, influence of structure on hysteresis of $BaTiO_3$, **3758**

Schönfeld, H., 1/f law of noise in semiconductors, **817**

Schonstedt, E. O., and H. R. Irons, airborne magnetometer Type-2A, **104**

Schooley, A. H., radar sea clutter, **3390**

Schopper, E., with others, Van de Graaff generator with liquid charge carrier, **915**

Schopper, H., optical investigation of interdiffusion of metals, **1391**

Schrag, R. L., method for studying large-scale irregularities in E region, **755**; M-type ionospheric reflections at 150 kc/s, **755**

Schroeder, A. C., and W. G. Gibson, television vertical aperture compensation, **1885**

Schröter, O., from punched-card computer to EDPM, **1629**

Schubert, D. C., with others, electron-optical image of atomic beam, **2861**

Schultz, B. H., decay of photoconductance in Ge, **810**

Schultz, C. W., with W. S. Bell, shipboard telemetry for missiles, **3180**

Schultz, F. V., with others, ring array as skip-range aerial, **326**

Schultz, G. P., Russian terminology for vacuum tubes, **1247**, for ionosphere, **1715**, for aerials, **2294**

Schultz, M. L., and G. A. Morton, photoconduction in Ge and Si, **772**

Schulta, T. J., condenser microphone, **2949**; cathode followers for impedance matching, **3010**; electronic wattmeter, **3496**; acoustic wattmeter, **3605**

Schultz, W., with H. U. Harten, barrier-layer photoelectric effect in Ge, **614**

Schulz, A., with W. Kluge, reduction of cathode fall of glow discharge, **389**

Schumacher, K., creep-path formation in synthetic materials, **142**

Schumann, W. O., influence of earth's magnetic field on wave propagation, **232**, **3060**; pulse trains associated with lightning flashes, **2394**

Schünemann, R., u.s.w. propagation, **3199**

Schurink, J. J., twin-cone loudspeaker, **12**

Schütt, K., discharge mechanism in Ar-filled counter, **1845**

Schütte, K., Index Mathematischer Tafelwerke und Tabellen aus allen Gebieten der Naturwissenschaften, **(B)2470**

Schüttlöffel, E., aerials for dm-λ radio-link network, **3283**

Schützer, W., with D. Bohm, statistical problem in physics and theory of probability, **1349**

Schwabe, E., with W. Andrä, rendering elementary magnetic domains visible, **1121**

Schwabe, G., variation of photo-e.m.f. with direction of illumination in PbS films, **3077**

Schwantes, R. C., H. J. Hannam and A. van der Ziel, flicker noise in secondary-emission tubes and multiplier phototubes, **3587**

Schwartz, E., colour-television systems, **1559**

—— with F. Below, position of colour subcarrier in 625-line adaptation of N.T.S.C. system, **1878**

Schwartz, M., with R. A. Logan, restoration of resistivity in Ge, **1094**

Schwartz, R. F., bibliography on directional couplers, **2165**

Schwartz, S., transistor characteristics, **1239**

Schwarz, R. F., with others, rectification properties of metal/semiconductor contacts, **157**

Schweinler, H. C., with others, magnetic indications of electronic structure in Ge, **472**; hydrogen in Ge and Si, **3776**; magnetic susceptibility of Ge, **1451**

Schwink, C., electron-optical shadow technique, **1515**; position of poles in magnetized Ni wire, **1466**

Scibor-Marchocki, R. I., analysis of 'hypex' horns, **658**

Sclar, N., and R. L. McFolin, sawtooth pulser gives voltage/current curves, **862**

Scollay, C. I. C., with G. W. G. Court, saturable-reactor frequency divider, **359**

Scolnik, R., with others, (OI) 5577A line in night airglow, altitude of, **3368**, and sodium D layers, **3369**

Scott, R. F., 1955–56 TV receivers in U.S.A., **2234**

Scott, T. R., Transistors and Other Crystal Valves, **(B)2592**

Scotto, M., and P. Parzen, excitation of space-charge waves, **2912**

Scroggie M. G., low-distortion f.m. discriminator, **1861**; unconventional f.m. receiver, **2524**

Seaman, M. S., with F. A. Benson, saturated diodes, **(D)1596**; a.c voltage stabilizer, **2487**

Searle, W. M., with others, ferrite modulator using feedback, **3015**

Seaton, M. J., explanation of drop in F-region critical densities, **2057**

Secker, G. W., with J. N. Barry, radio interference measuring set using transistors, **1537**

Sedra, R. N., and I. B. Hazzaa, effect of solar flares on ionosphere, **423**

Seemann, F. W., with D. Hahn, temperature dependence of brightness waves in electroluminescence, **2761**

—— with others, brightness waves in luminescence of phosphors, **137**

Segmuller, A., texture of thin Zn and Ge films, **3459**

Seidel, H., with S. Weinhaus, field-displacement isolator, **3675**

Seiden, J., scattering of protons in synchrotron, **2185**

Sekido, Y., and others, magnetic storms, solar phenomena and cosmic-ray storms, **1708**

Sekizawa, H., with others, uniaxial anisotropy in Fe-Co ferrites, **1467**

Seliger, H. H., with C. A. Ziegler, hysteresis effect in multiplier phototube stage, **928**

Sellen, J. M., Jr, with M. J. Mavrovouni, gas scattering in strong-focusing synchrotron, **1840**

Selzer, E., overdamped galvanometers as partial fluxmeters, **2487**

Semennikov, Yu. B., with others, electron-acoustic image converter, **2184**

Semiletov, S. A., with others, structure of $Tl_2Sb_2Se_3$, **2448**

Sen, H. K., magnetohydrodynamic shock wave in plasma, **2701**

—— and M. L. White, excitation of gravitational oscillations, **1404**

Sena, L. A., and N. S. Tsubo, contact phenomena in plasma, **3339**

Sennett, F. E., with others, dielectric properties in system MgO-CaO-SnO₂-TiO₂, **191**

Septier, A., four-pole magnetic lens for very high-energy particles, **3849**

—— with others, Optique électronique I: Lentilles électroniques, **(B)3507**

Serniuk, W., with others, multiple-frequency shift teletype systems, **564**

Serres, A., with others, induced ferromagnetism by addition of Li ions to NiO, **2454**

Servant, R., and J. Gougeon, birefringence of paper at 9·35 kMc/s, **3140**

Servigne, M., P. Guérin de Montgareuil and D. Dominé, analysis of impurities in gases, **3349**

Sette, D., with V. Andreacchi, nuclear-resonance meter for magnetic flux, **3480**

—— with G. Della Pergola, action of etchants on Ge, **2106**; apparatus for measurements on semiconductors, **3444**

Setterwall, M., mechanical binary-decimal converter, **1966**

Setton, R., relays with sensitive zone and hysteresis, **1979**

Setty, C. S. G. K., with others, production and loss of electrons in ionosphere, **2724**

Severin, H., with E. Meyer, absorption of cm-λ waves, **3037**

Sewter, J. B., and D. Wray, balanced equalizer amplifier for transmitting video signals, **275**

—— with M. B. Williams, circuits for television outside broadcasts, **2545**

Sferrazza, P. J., travelling wave resonator, **1325**

Shafratova-Ekertova, L. I., conductivity of Sb-Cs layer, **2417**

Shain, C., with others, Jupiter of radio sources, **406**; absorption of cosmic noise during ionospheric disturbances, **1411**; 18·9-Mc/s radiation from Jupiter, **2710**

Shakhsuvarov, D. N., with A. N. Tikhonov, e.m. fields in stratified media, **3036**; using e.m. field of earth for investigating upper layers, **3839**

Shalyt, S. S., with others, photomagnetoelectric effect in Cu_2O at low temperatures, **822**

Shannon, C. E., and D. W. Hagelbarger, concavity of resistance functions, **1635**

Sharma, S. K., with others, ionospheric observations at Banaras during solar eclipse, **2514**

Sharp, L. W. D., vibratory-power-supply techniques, **1216**

Sharpe, L., with J. C. Webster, improvements in message reception, **1287**

Shatas, R. A., J. F. Marshall and M. A. Pomerantz, dependence of secondary-electron emission on angle of incidence of primaries, **3343**

—— with others, conductivity induced in MgO crystals by electron bombardment, **158**

Shatilov, A. V., with N. A. Tolstoi, relaxation curves of luminescence and photoconductivity, **3076**

Shaw, E. A. G., electromechanical coupling coefficients in piezoelectric vibrator, **647**; vibrations of thick $BaTiO_3$ disks, **1936**

Shchaenko, V. V., with Z. A. Trapeznikova, ZnS phosphors activated with rare-earth elements, **2080**

Shearman, E. D. R., ground back-scatter, propagation by, **1854**, ionospheric investigation using, **1855**

—— and L. T. J. Martin, back-scatter ionospheric sounder, **3197**

Sheffield, H. C., microwave relay system, **2537**

Shenfeld, S., and M. Finkle, storage-tube device simulates radar net, **2077**

Shepherd, A. A., with others, Si junction power diodes, **3889**

Sher, I. H., methods of obtaining least-squares lines, **2469**

Sheridan, K. V., with others, absorption of 3·5-m radiation in nebula NGC 6357, **1395**; r.f. emission from novae and supernovae, **2708**

Sheriff, R. M., total electron content of F region over Ahmedabad, **2055**

Sherman, K. L., with others, transistor pulse generators, **358**; transistor generator simulates radar target, **2496**

Sherry, N. P. R., with L. F. Bates, reversible and irreversible components of magnetothermal effect, **823**

—— with L. C. F. Blackman, anomalous time-constant of MgMn ferrites, **1468**

Sherwin, C. W., and others, detection of signals by human and electronic detector, **3609**

Sherwood, E. M., with others, preparation of high-purity thorium, **2148**

Shevchik, V. N., theory of multiresonator magnetron, **2577**

Shibata, N., with others, dissociation of BaO under electron bombardment, **3260**

Shibuya, M., 'hot-electron' problems in semiconductors, **464**

Shil'krut, D. I., logarithmic decrement and fractional attenuation of potential energy, **708**

Shilliday, T. S., with others, high-temperature TiO_2 rectifiers, **1218**

Shimada, J., with others, magnetic resonance in α-Fe_2O_3, **486**

Shimauchi, A., with others, observation of nuclear resonances with coaxial-cavity spectrometer, **1696**

Shimazaki, T., F_2 layer, height of maximum electron density of, **419**, structure of, **3050**

Shimoda, K., and T. C. Wang, hyperfine structure of NH_3, **1693**

—— T. C. Wang and C. H. Townes, theory of maser, **3710**

Shindo, T., theory of dislocation in Ge, **3427**

Shinn, D. H., tables of group refractive index for ordinary ray, **755**

Shipek, C. J., with others, acoustic properties of shallow-water sediments, **1930**

Shipman, J. S., theory of noise through nonlinear devices, **509**

—— with others, tables of Bennett functions for two-frequency modulation product, **2213**

Shipov, V., A. Smirnov and P. Popov, radio literature in U.S.S.R., **2269**

Shirane, G., F. Jona and R. Pepinsky, aspects of ferroelectricity, **785**

—— R. Pepinsky and B. C. Frazer, diffraction study of $PbTiO_3$, **2771**

—— with others, ferroelectricity in alums, **3404**

Shklovski, I. S., radiation from galaxy NGC 4486, **3356**

—— with others, emitters of cosmic radio emission on λ 3·2 cm, **1044**

Shmoys, J., long-range propagation of low-frequency waves, **1529**

—— and S. N. Karp, calculation of charge-density distribution from transit-time data, **3382**

Shockley, W., transistor physics, **1458**

Sholokhova, E. D., with S. F. Rodionov, sky brightness during solar eclipse, **1705**

Sholokhovich, M. L., with others, single crystals of Ba and Sr titanate solid solutions, **3757**

Shone, A. B., synchronization of television picture sources, **283**

Short, M. A., and E. G. Steward, X-ray powder diffraction data for ZnS, **1735**

—— E. G. Steward and T. B. Tomlinson, electroluminescence in disordered ZnS, **1736**

Short, O. A., silver migration in electric circuits, **3127**

Short, P. J., with others, probability distribution of constant vector plus Rayleigh-distributed vector, **197**, **234**

Shorter, D. E. L., and H. D. Harwood, ribbon-type pressure-gradient microphone, **1607**

Shrader, R. E., with S. Cavach, electroluminescence from boron nitride, **3081**

Shraifel'd, T. Ya., with L. L. Korenbit, theory of high-conductivity semiconductors, **2094**

Shulelkin, V. V., and L. A. Korneva, winds in the ionosphere, **2734**

Shulman, A., p.p.i. display uses precision interlace, **2398**

Shul'man, A. R., secondary emission from dielectrics, **3344**

—— and B. P. Dement'ev, secondary emission from alkali halide crystals, **3695**

—— and I. I. Farbshtein, scattering of electrons by Ni and Mo targets, **719**

—— and A. N. Pinevski, temperature variations of work function of Ge, **2795**

—— and A. F. Rumyantsev, thermionic emission properties of ThO and Th, **3259**

Shulman, R. G., hole trapping in Ge, **3780**

—— and B. J. Wyluda, Cu in Ge: recombination and trapping centres, **3781**

—— J. M. Mays and D. W. McCall, nuclear magnetic resonance in InSb and GaSb, **1107**

Shultz, R. S., and W. R. Walts, functional divisions for electronic equipment, **1267**

Shumway, G., with others, acoustic properties of shallow-water sediments, **1930**

Shur, Ya. S., and V. K. Abel's, Si-Fe crystals, magnetic structure of, **824**, nucleation centres in, **1464**

Shurmer, H. V., standing-wave detector for low power levels, **215**

Sichak, W., and D. J. Levine, microwave high-speed continuous phase shifter, **321**

—— with F. J. Altman, simplified diversity system for beyond-horizon links, **3185**

Sideriades, L., flip-flop with four equilibrium positions, **2339**; nonlinear coupled systems, **2686**

Sidorowicz, R. S., generation of rectangular pulses, **2338**

Siedentopf, H., with H. Elsässer, height of emission of 5577 line of airglow, **2738**

Siekanowicz, W. W., and F. Sterzer, travelling-wave amplifier with periodic permanent magnets, **1251**

Siforov, V. I., interference stability of systems with correcting codes, **3876**

Silin, V. P., with V. L. Ginzburg, conductivity and skin effect in metals, **711**

Siliars, R. W., effect of field emission on semiconductor contacts, **1084**

Sils, V., with others, densities and imperfections of single crystals, **838**

Silverman, R. A., scattering from eddies, **234**; turbulent-mixing theory applied to radio scattering, **3853**

Simkins, Q. W., and J. H. Vogelhong, transistor amplifiers for digital computers, **1014**

Simon, J. C., problems of fluctuation in radio, **1925**

Simon, L., with A. Ross, gate selects pulses for analysis, **3313**

Simonyi, K., particle accelerators for a few MeV, **3845**

Simpson, A. W., with L. F. Bates, thermal effects associated with magnetization, **1139**

Simpson, J. A., F. Jory and M. Pyka, deriving geomagnetic dipole-field coordinates from cosmic-ray observations, **2371**

—— and others, effective geomagnetic equator, **3721**

—— with others, electron scattering measurements, **849**

Simpson, L. C., with others, system parameters using tropospheric scatter propagation, **567**, **3185**

Simpson, O., with D. C. Northrop, electronic properties of aromatic hydrocarbons, **2093**

Sims, G. D., and D. Gabor, theory of pre-oscillating magnetron, **938**

—— with D. Gabor, magnetron theory, **(D)1586**

Singer, E. N., and H. E. Cader, broadband aerial, **1305**

Sinha, N. K., with J. Willis, nonuniform lines as impedance matching sections, **664**, **1614**; impedance transformers, **3277**

Sinno, K., disturbances in F_2 layer associated with geomagnetic disturbances, **426**, **1720**

Sinton, W. M., solar and lunar radiation at 1·5 mm, **1704**

Sirkis, M. D., with P. D. Coleman, harmodotron for producing mm-λ and sub-mm-λ waves, **1000**

Sirvetz, M. H., and J. H. Saunders, resonance widths in Ni-Co ferrites, **3119**

Sitenko, A. G., with A. I. Akhiezer, plasma oscillations in external field, **3018**

Sivertsen, E., with others, intelligibility of diphasic speech, **2942**

Skalicky, M., equivalent circuit of transistor, **928**

Skalnik, J. G., transient behaviour in a ferroresonant circuit, **2986**

Skal'skaya, I. P., field inside parabloidal reflector, **3648**

—— with others, e.m. field of linear radiator inside parabolic reflector, **3650**

Skanavi, G. I., and A. M. Kashtanova, semiconducting ceramics based on WO_3, **3109**

Skelb, G., propagation of sound in turbulent atmosphere, **307**; influence of solar eclipse on propagation of atmospherics, **1400**

Skinner, N. J., and R. W. Wright, recombination and ion production, **113**; equatorial ionospheric absorption, **3855**

—— with others, spread F-layer echoes and radio-star scintillations, **2731**

Skinner, R. I., noise sources using gas-discharge tubes, **3147**

Skinner, S. M., J. Gaytor and G. W. Sohl, e.s. charges in plastics, **2684**

Skobelkin, V. I., and R. N. Solomko, magnetostatics with ferromagnetic materials, **83**

Skribeland, S., with others, ionospheric observations during solar eclipse, **3379**

Skwirzynski, J. K., with K. G. Fancourt, simple frequency discriminator, **3325**

Slater, L. J., table of Laguerre polynomials, **2465**

Slee, O. B., intensity variations of r.f. source Hydra-A, **1701**

—— with others, galactic survey at 400 Mc/s, **735**

Slepian, D., binary signalling alphabets, **1865**

Slichter, C. P., spin resonance of impurity atoms in Si, **151**

—— with D. Pines, relaxation times in magnetic resonance, **1388**

Silfkin, L., with others, self-diffusion in Ge, **3429**

Slutsker, A. I., with P. F. Veselovski, relaxation processes in polyvinyl acetate, **1477**

Smakula, A., J. Kalnajs and V. Sils, densities and imperfections of single crystals, **838**

Smales, A. A., comparison of methods for determination of trace impurities in semiconductors, **796**

Small, A. M., Jr, parameters influencing pitch, **7**

Small, G. F., with R. G. Medhurst, echo distortion in f.m. frequency-division multiplex, **1867**, **(D)3214**

Smart, D., method of deriving negative feedback in transmitters, **2556**

Smart, J. S., application of Bethe-Weiss method to ferrimagnetism, **2026**

Smirnitskaya, G. V., with others, ionic pumps with cold electrodes, **3748**

Smirnov, A., with others, radio literature in U.S.S.R., **2269**

Smirnov, N. N., propagation of waves along helix, **3276**

Smirnov, V. A., nonlinear distortions in multichannel communication systems, **3216**

Smit, J., spontaneous Hall effect in ferromagnetics, **1465**

Smit, J. G., propagation of e.m. waves in conducting media, **2868**

Smith, D. L. A., with M. B. Martin, magnetic recording equipment for stereophonic reproduction, **1609**

Smith, D. O., magnetization of magnetic single crystal, **3449**; vibrating-coil magnetometer, **3483**

Smith, E. R., with others, developments in vibration measurement, **225**

Smith, F. G., search for radiation from Jupiter, **2036**

Smith, G. F., thermionic emission from tungsten, **1367**

Smith, H. W., with others, radio signals on overwater paths, **1530**

Smith, J. M., with F. W. Ruppert, airborne weather radar, **1426**

Smith, J. W., with R. M. Ringoen, v.h.f. trans-horizon communication techniques, **2532**

—— with others, multipath simulator tests communications, **3191**

Smith, K. C. A., and C. W. Oatley, scanning electron microscope, **1179**

—— with J. W. Allen, electron microscopy of etched Ge surfaces, **1447**

Smith, M., radio and television interference, **3867**

Smith, P. F., atmospherics analyser, **1196**

Smith, P. L., with others, optical properties of deformed Ge, **154**

Smith, P. W., Jr, characteristics of free waves in cylindrical shell, **1275**

Smith, R. A., Radar Research Establishment, Malvern, **3596**
Smith, R. L., with others, the 'nose' whistler, **2393**
Smith, R. S., dielectric constant of heterogeneous media, **3760**
Smith, R. W., edge electroluminescence from ZnS, **1071**
Smith, S. J., and L. M. Branscomb, negative-ion-photodetachment cross section, **396**
—— with L. M. Branscomb, negative oxygen ions in upper atmosphere, **3053**
Smith, V. G., W. A. Tiller and J. W. Rutter, mathematical analysis of solute redistribution, **1758**
Smith-Rose, R. L., radio communication by wave scattering, **233**; international research in radio astronomy, **1043**
Smolenski, G. A., ferroelectrics and antiferroelectrics of oxygen-octahedral type, **2770**
—— V. A. Isupov and A. I. Agranovskaya, high permittivity of niobates and tantalates, **3402**
—— and others, ferroelectric properties of stannates, **3405**
Smolinski, A., amplifiers with triple-tuned coupled circuits, **3318**
Smorodina, T. A., with I. M. Bronshtein, secondary emission, from Be, **1679**, from Ag, **1680**
Snow, C., formulas for computing capacitance and inductance, **1318**
Soanes, S. V., serial digital decoder, **2632**
Sobel, M., reducing experiment time in reliability studies, **1803**
Sochard, I., with others, photoelectromagnetic effect in CdS, **2404**
Sohl, G. W., with others, e.s. charges in plastics, **2684**
Sokolov, A. V., with others, photoelectric effect in metals, **373**
Soldi, M., and M. Valerian, transistor circuit for resonance-coefficient multiplier, **1013**
Sollenberger, T. E., multiphase phase errors in c.w. f.m. tracking systems, **2748**
Sollom, P. H., and J. Brown, cm-λ parallel-plate spectrometer, **2478**
Solntsev, G. S., and M. M. Dmitrieva, two-electrode h.f. discharge, **2689**
Solomko, R. N., with V. I. Skobelkin, magnetostatics with ferromagnetic materials, **83**
Solomon, L. N., with J. C. Webster, response complexity in listening to competing messages, **1288**
Solomon, S. S., space-charge waves in crossed fields, **1585**
Solov'ev, E. G., waveguides with longitudinal diaphragms, **978**; propagation between cylindrical surfaces with longitudinal diaphragms, **3280**
Solov'ev, V. A., and I. G. Mikhailov, theory of compound piezoelectric vibrator, **2770**
Soma, S., with S. Fuse, field intensity measuring, **2525**
Somerville, M. J., a.c. potentiometer for measurement of amplitude and phase, **3148**; circuit for analogue formation of xy/Z, **3655**
Somerville, T., monitoring sound broadcast programs, **2221**
Sominski, M. S., with A. R. Regel', effect of impurities on conduction mechanism of AlSb, **1106**
Sommer, A. H., high-sensitivity photomissive cathodes, **608**
Sommers, H. S., Jr, R. E. Berry and I. Sochard, photoelectromagnetic effect in CdS, **2404**
Sondheimer, E. H., with R. Englman, conductivity of anisotropic thin films, **3084**
Sonnenfeldt, R. W., with T. Murakami, detectors in symmetric and asymmetric sideband systems, **1566**
Sorokine, W., long-distance television reception in U.S.S.R., **3523**
Southwick, R. D., with H. B. Huntington, ultrasonic velocities in $BaTiO_3$ ceramics, **144**
Southworth, G. C., history of radio astronomy, **2706**
Soutif-Guichard, J., circularly polarized waves in gyroparamagnetic medium, **2289**; Faraday effect in gyroparamagnetic medium, **2618**
Sovetov, N. M., with E. V. Anisimov, propagation along helical strip, **2955**
Spachner, S., and W. Rostoker, loss of texture in Ni-Fe alloy tapes, **483**
Spandöck, F., electroacoustic transducers, **656**
Spear, W. E., electron bombardment effects in thin dielectric layers, **1778**
Spearman, F. R. J., and others, triac analogue computer, **2300**
Speck, F., with others, balloon-borne system for tracking sun, **3844**
Spedding, F. H., with others, magnetic properties of erbium, **1787**
Spencer, C. W., and G. H. Bazzard, semi-automatic pen-recorder chart analyser, **3822**
Spencer, D. E., with P. Moon, Ampère force, **1371**; differential equations of field theory, **3820**
Spencer, E. G., R. C. LeCraw and F. Reggia, microwave measurements on ferrite spheres, **2846**
Spencer, J. G., with G. F. Newell, photographic records of effect of noise on television picture, **1234**
——with others, v.h.f. u.h.f. field-strength recording receiver, **3528**
Spencer, M., shape of irregularities in upper ionosphere, **121**
—— with B. H. Briggs, variability of time shifts in measurements of ionospheric movements, **755**
—— with G. J. Phillips, effects of amplitude patterns in measurement of ionospheric drifts, **120**
Spencer, R. C., and others, double-parabolic-cylinder aerial, **985**
Spengler, H., sub-group-B metal compounds with Ga, **187**
Spenke, E., Elektronische Halbleiter, **(B)504**
Spicer, B. M., and A. S. Penfold, energy stability of 22-MeV betatron, **1176**
Spicer, C. E., 'vitascan' colour TV scanner, **3228**
Spiess, S., theorem on two-pole networks, **38**
Spieth, W., and J. C. Webster, listening to filtered voice messages, **650**
Spitzer, W. G., and H. Y. Fan, infrared absorption in InSb, **814**
—— with others, infrared absorption in n-type Ge, **2110**
Spivak, G. V., I. N. Prilezhaeva and V. K. Asovtsev, electron mirrors and observation of domains in ferromagnetic materials, **1794**
—— and others, depiction of domains of ferromagnetic material, **1793**
Spooner, A. M., electronic switches for television, **2551**
Sprenger, K., and E. A. Lauter, observations of lower ionosphere during solar eclipse, **2062**
Springer, A. M., time regulator for sound recordings, **2952**
Srdoč, D., oxygen-quenched G-M counter, **3505**
Sretenski, L. N., emission of sound by rotating dipole, **3266**
Srinivasan, N. R., and H. S. Aswath, contact angle in soldering, **1479**
Srivastava, C. M., propagation of radio atmospherics, **3189**
Srivastava, R. B. L., with S. N. Mitra, analysis of sky-wave field intensity, **1852**
Stäblein, H. G., propagation of long-wave atmospherics, **231**
Stacey, D. S., with R. A. Nidey, photoelectric angular-error sensors, **3162**
Stacey, F. D., fluctuating-field model of ferromagnetism, **1462**; behaviour of ferromagnetics under compression, **3115**
de Stadelhofen, J. Meyer. See Meyer de Stadelhofen, J.
Stairmand, G. D., with J. E. Parton, magnetic flux probe, **1817**
Stamps, G. M., with others, multipath simulator tests communications, **3191**
Standing, A. F., power pack design, **912**
Standley, K. J., and K. H. Reich, ferromagnetic resonance in Ni and its alloys, **829**
Stanesby, H., review of communication systems, **1541**
—— with F. J. M. Laver, reciprocal transmission over long-distance radio circuits, **1857**
Stankevich, K. S., with others, 91·6-cm radiation of deuterium in galaxy, **408**
Stanley, G. J., and R. Price, radio emission of deuterium from galaxy, **3039**
—— with others, galactic survey at 400 Mc/s, **735**
Star, M., with others, encoding colour for telecasting, **588**
Staras, H., forward scattering by anisotropic turbulence, **239**; diversity reception with correlated signals, **1862**; statistics of combiner diversity, **3525**
Stark, K. H., and C. G. Garton, electric strength of irradiated polythene, **1146**
Starke, H. F., transistor pre-amplifiers, **3323**
Statton, W. O., with L. C. Hoffman, structure in vitreous silicates, **190**
Statz, H., and others, surface states on Si and Ge surfaces, **2434**
—— with H. Schofield, junction transistors with $\alpha > 1$, **1893**
Staub, T., construction of shockproof measurement instruments, **853**
Stavitskaya, T. S., with others, thermoelectric cooling, **3224**
Stebbins, D. W., with K. W. Decker, work functions of La, Pr and Nd borides, **167**
Steele, J. McA., standard-frequency monitor at N.P.L., **(D)516**
Steen-Andersen, K., coverage of TV and f.m. stations, **1532**
Stehle, P., particle transport in magnetically immobilized plasma, **1030**
Stein, R., and B. Reuter, photo-effect in PbS, **3249**
Steinberg, J. L., with others, atmospheric absorption at 9·35 kMc/s, **2737**
Steinberger, I. T., W. Low and E. Alexander, influence of alternating electric fields on light emission of phosphors, **446**
Steinemann, A., with others, dielectric properties of ice, **377**
Stephens, R. B., mains voltage stabilizers, **1870**
Stephenson, B. T., and C. H. Walter, end-fire slot aerials, **1306**
Stephenson, C. V., radial vibrations in short $BaTiO_3$ cylinders, **1937**
Stephenson, L. M., with H. E. M. Barlow, Hall effect and application to power measurement, **1488**
Stephenson, W. L., junction-transistor noise at 7·50 kc/s, **606**
Stern, F., and R. M. Talley, impurity band in semiconductors with small effective mass, **1748**
—— with R. M. Talley, degeneracy effect in InAs, **145**
Sternberg, R. L., design of microwave lenses, **2298**
—— J. S. Shipman and H. Kaufman, tables of Bennett functions for two-frequency modulation product, **2213**
Sternberg, S., electronic multiplier, **1312**
Sternglass, E. J., electron multiplication by transmission secondary emission, **1896**
Sterzer, F., with W. W. Siekanowicz, travelling-wave amplifier with periodic permanent magnets, **1251**
Stetter, W., with W. Guber, optical method for determining grid-cathode spacing, **2569**
Stevels, J. M., with A. Kats, effect of radiation on SiO_2, **3460**
—— with J. Volger, polarizability of colour centres in quartz and glasses, **2768**
—— with others, dielectric losses of quartz, **451**
Stevens, D. K., and J. H. Crawford, Jr, magnetic susceptibility of InSb, **163**
—— and others, magnetic susceptibility of Ge, **1451**
—— with others, magnetic indications of electronic structure in Ge, **472**; hydrogen in Ge and Si, **3776**
Stevens, K. N., with A. S. House, testing description of vowel articulation, **653**
Stevens, K. W. H., population changes with magnetic field, **2806**
Stevens, S. S., measurement of loudness, **654**
Steward, E. G., with M. A. Short, X-ray powder diffraction data for ZnS, **1735**
—— with others, electroluminescence in disordered ZnS, **1736**
Stewart, C., applications of ferrite at 0·87 and 1·9 cm λ, **1957**
Stewart, J. L., f.m. noise in oscillators, **1649**
Stewart, R. M., filters for restoration of sampled data, **1331**
Stewartson, K., motion of sphere in presence of magnetic field, **3352**
Stickler, J. J., with others, rectification properties of metal/semiconductor contacts, **157**
Stier, H., P. Lindner and E. Rosche, flying-spot scanning, **2233**
Stil'bans, L. S., E. K. Iordanishvili and T. S. Stavitskaya, thermoelectric cooling, **3224**
—— with R. M. Vlasova, thermoelectric properties of Bi_2Te_3, **1083**
—— with others, semiconductor thermocouples, **2430**
Stirland, D. J., with D. S. Campbell, examination of etched crystals of $BaTiO_3$, **2414**
Stockman, C. H., with others, mathematics of zone melting, **1141**
Stöckmann, F., negative photo-effects in semiconductors, **1754**
Stoffregen, W., variation of fE_s during eclipses, **115**
Stöhr, W., with H. Laub, horn-parabola wide-band aerials, **2628**
Stolk, J., with J. C. van den Hengenband, impedance measurements by long line, **1158**
Stoll, S. J., origin of gas in electron tubes, **2906**
Stone, H. A., Jr, with R. S. Duncan, application of ferrites to inductor design, **995**
Stössel, W., with others, single crystals with pure surfaces, **1140**
Stout, V. L., and M. D. Gibbons, gettering by Ti, **1428**
Strafford, F. R. W., dual-band television aerials, **329**
Stratton, A. W., with others, radio signals on overwater paths, **1530**
Strakhov, L. P., with others, photo-e.m.f. of PbS photocells, **3251**
Strashkevich, A. M., theory of deflection, **3591**
—— and A. S. Revzlin, electron optical action of grid systems, **634**
Stratman, H. G., exciters multiplex f.m. carriers, **3558**
Stratonovich, R. L., with others, effect of electrical fluctuations on oscillator, **55**
Stratton, J. A., and others, Spheroidal Wave Functions, **(B)3133**
Stratton, R., field emission from semiconductors, **717**; semiconductor contacts, effect of field emission on, **3091**, surface barriers at, **3410**
—— with R. P. Chasmar, effective electron mass in InAs and InSb, **3793**
Straughan, B. W., with W. Bardsley, spiral etch pits in Si, **2788**
Strauss, S. W., resistivity of vitreous silicates, **3129**
—— and others, resistivity of vitreous ternary lead silicates, **2827**
Strosche, H., CdSe layers in Se rectifiers, **165**
Stroud, W. G., W. Nordberg and J. R. Walsh, atmospheric temperatures and winds, **2376**
Strutinski, N. I., with Ya. M. Turover, application of Tchebycheff polynomials, **3630**
Strutt, M. J. O., with W. Guggenbühl, spontaneous fluctuations in semiconductor barrier layers, **1894**
Struven, W. C., with W. M. Brobeck, bevatron frequency measurement system, **2483**
Strzalkowski, A., with others, solar radio radiation during eclipse, **3363**
Stuart, M. R., dielectric constant of quartz, **1474**
Stuckes, A. D., Johnsen-Rahbek effect, **1670**
Studer, F. J., and D. A. Cusano, transparent phosphor coatings, **444**
Stull, J. L., with others, magnetostriction and permeability of magnetite and Co-substituted magnetite, **494**
Sturley, K. R., ratio detector, **252**
Styles, H. E., sensitive u.r.f. receiver, **554**
Su, K. L., and B. J. Dasher, approximation problem for *RC* low-pass filters, **2993**
Subrahmanyam, D. L., with others, intelligibility of diphasic speech, **2942**
Suchy, K., with F. Delobeau, ionospheric absorption at Dakar, **3513**
Sucksmith, W., and S. P. Anderson, general-purpose electromagnet, **3711**
Sueker, K. H., etched wiring simplifies magnetic amplifier design, **64**
Sugar, G. R., fading characteristics of regular v.h.f. ionospheric propagation, **234**
Sugawara, M., time lag in vacuum phototubes, **2905**, **3567**
Suguri, Y., T. Ishida and K. Harada, time-signal generator using decade tubes, **1657**
Suhl, H., L. G. Van Uitert and J. L. Davis, ferromagnetic resonance in Mg-Mn-Al ferrite, **491**
—— with others, line width in ferromagnetic resonance, **2033**
Suhrmann, R., electronic interaction between adsorbed gas molecules and metal surfaces, **1672**; response of diode circuits to pulses, **1883**
Sulta, T., with D. A. Powers, pre-breakdown current and noise in insulators, **845**
Sullivan, M. V., and J. H. Eigler, electrolyte-stream etching of Ge, **2797**; metal hydrides as alloying agents on Si, **3818**
Sullivan, R. F., and R. C. LeCraw, ferrite microwave switch, **679**
Sulzer, P. G., pulse-transmission measurements over 2400-km path, **1524**
Sumoto, I., phenomenon observed on some dielectrics, **71**
Suozzi, J. J., magnetic amplifier two-speed servo system, **1552**
Suran, J. J., circuit theory of double base diode, **3562**
—— with S. P. Lapin, impulse noise in f.m. receivers, **2523**
Surange, P. G., with others, ionospheric observations at Banaras during solar eclipse, **2514**
Süss, R., with others, quartz clocks at the Physikalisch-Technische Bundesanstalt, **3468**
Sutcliffe, H., noise measurements in 3-cm waveband, **3825**
Sutherland, D. M., deteriorated diodes, **(D)1596**
Suzuki, M., with others, stabilization of Type-MR-103 capacitor microphone, **2276**; application of titanium to acoustic instruments, **3810**
Svenningsen, K., coast stations in Denmark, **3221**
Svenson, A. C., with J. A. Thomas, lunar tide in sporadic E, **1717**
—— with others, ionospheric recorders and sporadic E, **2730**
Sverdlov, Yu. L., with M. E. Zhabotinski, operation of amplitude limiter, **3676**
Swanson, J. A., saturation Hall constant of semiconductors, **801**
—— with others, Hall effect and conductivity in porous media, **3761**
Swarup, G., and R. Parthasarathy, solar brightness distribution at 60 cm, **1707**
Swerling, P., angular accuracy of pulsed search radar, **3747**
Swern, L., with B. J. Duncan, temperature behaviour of ferrites in waveguide, **2291**
Swift, J., disc-seal circuit technique, **1658**
Swiggard, E. M., with others, $BaTiO(C_2O_4)_2 \cdot 4H_2O$ for $BaTiO_3$, **3399**
Symonds, J. L., measuring strong magnetic fields, **2162**
Syui Syul-Yun, capture and recombination cross-sections in ZnS-Cu, Co phosphors, **442**, **2407**
Syun-ichi Akasofu. See Akasofu, Syun-ichi.
Székely, A., amplifier action of gas-filled triodes, **954**
Szendrei, M. E., and M. W. McElhinny, solar eclipse 25th December 1954, **2061**, recombination in F layer during, **3733**

T

Tachiki, M., with others, thermal transition of transparency in $BaTiO_3$, **453**
Taft, E., and L. Apker, photoelectric emission from graphite, **771**
Tager, P. G., stereophonic two-channel transmission, **968**
Taguchi, S., with others, spread echoes in F region over Japan, **1713**
Tai, C. T., integral equation formulation of cylindrical aerials, **1617**
Takahara, K., and others, 40–50-Mc/s overtone quartz units, **2330**
Takahashi, H., with W. Kinase, spontaneous deformation of $BaTiO_3$, **1742**
Takahashi, T., and M. Arai, wide-band v.h.f. wattmeter, **534**
—— with others, discriminating disturbances in solar noise observation, **741**; measurement of spurious emissions, **1811**
Takaku, K., with Y. Nomura, propagation of e.m. waves in inhomogeneous atmosphere, **545**
Talantsev, A. D., diode function simulators, **2970**
—— with others, electronic analogue apparatus of U.S.S.R. Academy of Sciences, **2636**
Talbot, A., properties of networks without mutual inductance, **41**
Talkin, A. I., and J. V. Cuneo, cascaded distributed amplifiers, **361**
Tall, M. M., with V. Harris, prediction of electronic equipment reliability, **1926**
Talley, R. M., and F. Stern, degeneracy effect in InAs, **145**
—— with F. Stern, impurity band in semiconductors with small effective mass, **1748**
Tamarkin, P., with E. O. LaCasce, Jr, underwater sound reflection from corrugated surface, **1938**
—— with others, propagation of sound pulses in dispersive medium, **1931**
Tanabe, H., with others, photoelectric studies of night sky light, **1714**
Tanaka, H., with others, solar enhanced region at cm λ from eclipse observations, **2043**
Tanaka, S., T. Masumi and S. Iijima, photocurrent of CdS in magnetic field, **2756**
Tandberg-Hanssen, E., with others, r.f. observations of solar eclipse 30th June 1954, **3719**
Tandon, J. N., geomagnetic activity and M regions, **3364**
—— with A. M. Naqvi, identification of radio stars, **1394**
Tanenbaum, M., and D. E. Thomas, diffused emitter and base Si transistors, **1890**
—— with others, *p-n-p-n* transistor switches, **3899**
Tani, K., with others, energy dissipation of conduction electrons, **3020**
Taniguchi, S., ferromagnetic anisotropy induced by magnetic annealing, **177**
—— with others, domain structure in cubic solid solutions, **3802**
Tannenwald, P. E., multiple resonances in cobalt ferrite, **172**; ferromagnetic resonance in Mn ferrite, **1791**
—— with J. O. Artman, susceptibility tensor in ferrites, **495**
Tao, K., relation between field strength and structure of atmosphere, **897**; ultra-short waves, propagation beyond horizon, **1858**, field strength at night, **3198**
Tarbes, P., CdS photoresistances, **2248**
Tarnovski, N. N., with B. I. Boltaks, electrical characteristics of Cu_2S_x, **164**
Tartakovski, B. D., symposium on electroacoustics, **2608**; sound coverage of open space, **3628**
Tartakovski, L. B., and A. M. Pokras, periscopic aerial system, **3646**
Tarui, Y., with M. Kikuchi, 'step' phenomena in A-type transistors, **603**
Tatarski, V. I., wave propagation in slightly inhomogeneous atmosphere, **2869**
Taub, H., and others, encoding colour for telecasting, **588**
Taube, N. S., with L. A. Sena, contact phenomena in plasma, **3339**
Tauer, K. J., with R. J. Weiss, thermodynamic functions of iron, **3807**
Tavernier, J., carrier mobility in InSb, **3443**
Taylor, B. R., and R. Bird, gas-filled diode as digital storage element, **1972**
Taylor, E. A., production of large crystals, **2416**
Taylor, H. E., determination of resistance of glass, **521**
Taylor, J. B., with G. F. Alfrey, electroluminescence in ZnS, **781**
Taylor, J. G., electrodynamics at distribution theory, **2027**
Taylor, J. G. V., with others, reliability of atomic masses in Cr-Ge region, **96**
Taylor, J. H., pressure dependence of energy gap for InAs, **1771**
Taylor, K. M., boron nitride, **2462**
Taylor, P. H. J., with H. F. Woodman, facsimile communication, **2190**
Taylor, T. T., line-source aerials for narrow beam width, **984**
Teas, D. C., with others, localization of sound sources, **649**
Tebble, R. S., Barkhausen effect, **1685**
Teer, K., with J. Hasnips, compatible colour television, **1224**
Telford, M., T-stub calculations for transmission-line filters, **1332**
Tel'kovski, V. G., secondary emission under action of ions, **3341**
Templeton, I. M., superconducting modulator, **518**; chart for crystal rectifier constants, **2241**
—— with others, resonant-cavity method for measuring resistivity, **2158**
Tenzer, R. K., apparatus for investigating aging in permanent magnets, **1816**
Teodorchik, K. F., with I. I. Minskova, synchronization of oscillations, **2333**
Teplova, A. P., V. M. Tuchkevich and A. I. Uvarov, input resistance and reactance of transistor amplifier, **3474**
Terada, J., X-ray study of Ba-Sr-Ca triple oxide, **627**
Terhune, R. W., with others, signal/noise ratios of photoconductive detectors, **2565**
Terol, S., and R. Ward, perovskite-type ternary oxides as luminophors, **1065**
Tewksbury, J. M., beam-deflection valve simplifies radio compass, **2396**
Tewordt, L., with others, magnetic blocking layer in semiconductors, **2100**
Thaler, G. J., and R. G. Brown, Servomechanism Analysis, **(B)2544**
Thaler, S., with R. Boxer, solving linear and nonlinear systems, **999**
Thambyahpillai, T., with I. J. van Heerden, 27-day recurrence tendency of cosmic-ray intensity, **1045**
Thelle, R., and H. Fix, signal/noise ratio in television, **2897**
Theis, W., electron-optical investigations of Se, **2102**
Theissing, H. H., and F. J. Caplan, atmospheric attenuation of solar mm-λ radiation, **3041**
—— and J. McCue, λ measurement in mm region, **1827**
Thiele, A. N., design of filters with *RC* sections, **1329**
Thiessen, G. J., efficiency of line source with phase shift, **1280**
Thirup, G., 3-phase *RC* generators for measurements, **1159**
Thom, H. G., with H. Pupke, rotation of plasmoids in magnetic field, **2021**
Thomas, A., nuclear batteries, **1871**
Thomas, A. N., with others, Crystal Palace television station, **3895**
Thomas, D. E., tables of phase of semi-infinite unit attenuation slope, **2989**
—— with M. Tanenbaum, diffused emitter and base Si transistors, **1890**
Thomas, J. A., and R. W. E. McNicol, automatic recording of direction of arrival of radio waves, **543**
—— and A. C. Svenson, lunar tide in sporadic E, **1717**
—— A. C. Svenson and H. E. Brown, ionospheric recorders and sporadic E, **2730**
Thomas, J. E., Jr, and K. H. Redker, surface recombination velocity in Ge, **2441**
Thomas, J. O., with E. R. Schmerling, distribution of electrons in undisturbed F_2 layer, **2726**
—— with others, production and loss of electrons in ionosphere, **2724**
Thomson, J. G., precision photographic timer, **1175**; Linear Feedback Analysis, **(B)3017**
Thompson, A. M., and D. G. Lampard, theorem in electrostatics and application to capacitance standards, **2837**

Thompson, A. R., with others, polarization measurements on radio sources, **3714**
Thompson, G. H. B., ferrites in waveguides, **2958**
Thompson, J. C., paramagnetic effect in superconducting Sn, In and Tl, **3446**
Thompson, L. G., with C. F. Devenny, Jr, ferromagnetic computer cores, **497**
Thompson, M. C., with J. C. Herbstreit, phase measurements over transmission paths with atmospheric turbulence, **234**
Thompson, M. C., Jr, with others, measurement of correlation coefficients in reverberant sound fields, **1284**
Thompson, P. O., with others, acoustic attenuation of ear protective devices, **3618**
Thomsen, S. M., and R. H. Bube, high-sensitivity photoconductor layers, **611**
Thomson, J., design of electronic devices for production, **1249**
Thornton, W. A., electroluminescence in ZnS, **2764**
Thorp, J. S., X-ray method for studying current distributions in electron beams, **941**
—— with A. W. Bright, measurements on hollow cathode, **1260**
Thourel, L., double-curvature reflectors, **1626**; aerial with wide-lobe radiation pattern, **2963**
—— and S. Herscovici, design of radomes, **1965**
Thuillier, J. M., thermal conductivity of semiconductors, **799**, **3089**
—— with C. Rigaux, negative magnetoresistance effect in semiconductors, **3413**
—— with others, thermomagnetoelectric effects in InSb, **2120**
Thurston, E. G., ice detector for lighter-than-air craft, **870**
Thwing, E. J., masked threshold and duration of stimulus, **3610**
Tice, T. E., with J. H. Richmond, probes for microwave measurements, **2170**
Tidd, W. H., bandwidth capabilities of beyond-horizon tropospheric propagation, **234**
Tien, P. K., large-signal theory of travelling-wave amplifiers, **2571**; minimum noise figure of beam-type microwave amplifiers, **3257**
Tikhonov, A. N., and A. A. Samarski, magnetization of cylinder by coil, **3697**
—— and D. N. Shakhsuvarov, e.m. fields in stratified media, **3036**; using e.m. field of earth for investigating upper layers, **3839**
Tikhonov, V. I., electrical fluctuations, measurement of, **1484**, effect on detector of, **2208**, influence on electronic relay of, **3681**
—— with others, effect of electrical fluctuations on oscillator, **55**
Tilden, E. F., with others, anisotropy and magnetostriction of ferrites, **831**
Tiller, W. A., and J. W. Rutter, effect of growth conditions on solidification of binary alloy, **2146**
—— with others, mathematical analysis of solute redistribution, **1758**; growth twins in Ge, **3101**
Tillman, J. D., and others, ring array as skip-range aerial, **326**
Tillman, J. R., negative-impedance converter, **63**
Timm, U., calculation of e.s. lenses, **3168**
Timofeev, A. A., with others, characteristics of discharge at positive probe, **2686**
Tinkham, M., cyclotron resonance in Bi, **2140**
Tino, Y., with M. Sato, magnetic anisotropy energy of Ni and Ni-Cu alloys, **2453**
Tipnis, C. B., with others, ultrasonic output of quartz radiator, **311**
Tischer, F. J., standing-wave detector with helix-line element, **1493**
Tkachenko, A. D., intelligibility of speech transmitted by communication paths, **313**
Todd, B. J., outgassing of glass, **767**
Tolhurst, G. C., and R. W. Peters, effect of attenuating one channel of dichotic circuit, **3606**
Tolpygo, K. B., and I. G. Zaslavskaya, bipolar diffusion in semiconductors, **1752**
—— with E. I. Rashba, V-I characteristic at n-p barrier layer, **2122**
Tolstoi, N. A., and I. A. Litvinenko, measurement of quantity of light in luminescence processes, **1804**
—— and A. V. Shatilov, relaxation curves of luminescence and photoconductivity, **3076**
—— and others, photoconductivity and luminescence of CdS(Cu), **3750**
Tolstoy, I., dispersion and simple harmonic point sources in wave ducts, **730**
Tombs, D. M., corona-wind loudspeaker, **659**
Tomiyasu, K., annular waveguide rotary joint, **1954**
Tomizuka, C. T., with M. F. Millea, melting patterns on InSb crystals, **1774**
Tomlin, D. H., with R. A. Hyman, fixation of iodine in Se, **802**
Tomlinson, T. B., with others, electroluminescence in disordered ZnS, **1736**
Tonolo, A., e.m. field inside homogeneous conductor, **3698**
Toraldo di Francia, G., Babinet's principle for directionally conducting screens, **3705**
—— with L. Ronchi, angular momentum of field in waveguide, **18**
Torikai, Y., and K. Negishi, method for visualization of ultrasonic fields, **2273**
Torizuka, Y., and others, Zeeman effect in NH_3 microwave spectra, **93**
Tortosa, J., with others, thermoelectric effect of CuO, **3111**
Toscano, P. M., and J. B. Hoffner, d.c. tube power supply uses transistor oscillator, **3887**
Tousey, R., with others, night airglow [OI] 5577A and sodium D layers, **3369**
Towle, L. T., with D. K. C. MacDonald, integrals in metallic conductivity, **3691**
Townes, C. H., with others, the maser, **403**, **3710**; microwave application of electron spin resonance, **3032**
Trapeznikov, V. A., with others, electronic analogue apparatus at U.S.S.R. Academy of Sciences, **2636**
Trapeznikova, Z. A., and V. V. Shchavelev, ZnS phosphors activated with rare-earth elements, **2080**
Trautner, G., exact measurement of e.m., **1485**
Travers, D. N., sparing error analysis of 8-element direction finder, **1423**
Trembasky, R., with R. Lanoval, new acoustic characterisation of rooms, **3619**
Trent, G. H., with J. H. Piddington, cosmic radio sources observed at 600 Mc/s, **2707**
von Trentini, G., aerials with reflectors and conducting disks, **1310**; transmission of e.m. waves by pair of gratings, **1376**; new microwave aerials, **1963**
Tretner, W., aperture error in magnetic electron lenses, **C539**
Treuting, R. G., aspects of slip in Ge, **1099**
Tricomi, F. G., confluent hypergeometric functions, **507**
Triebwasser, S., behaviour of ferroelectric $KNbO_3$, **2412**
Troitski, V. S., reflection of ultra-short waves in troposphere, **3518**
Troitski, V. S., small method of measuring weak electrical fluctuations, **222**; fluctuations in loaded line, **2473**
—— with others, 81-cm radiation of deuterium in galaxy, **408**
Trolan, J. K., and others, electron emission from clean tungsten, **1912**
—— with others, temperature-and-field emission from tungsten, **392**
Trolese, L. G., characteristics of tropospheric scattered fields, **237**
Truan, C. J., with K. E. Mortenson, screen-room measurements, **3471**
Tschegg, C. E., with M. Greenspan, speed of sound in water with dissolved air, **2935**
—— with others, temperature coefficient of speed of sound in water, **2934**
Tsenter, M. Ya., with others, photoconductivity and luminescence of CdS(Cu), **3750**
Tsidil'kovski, I. M., and F. G. Bass, equations of transport in strong electric fields, **(D)458**
Tsukerman, I. I., magnetic field for focusing electron beams, **1511**; magnetic electron-optical systems free from image rotation, **1598**
Tsung-Che, Y., with others, electron emissions, conduction and noise of oxide-coated cathodes, **629**
Tuchkevich, V. M., with others, input resistance and reactance of transistor amplifier, **3474**
Tucker, D. G., signal/noise performance of detectors, **251**; underwater echo-ranging, **2742**
—— and J. W. R. Griffiths, detection of pulse signals in noise, **129**
—— and G. G. Jamieson, discriminator of synchronized oscillator, **2334**
Tucker, G. L., with others, spin-echo storage, **1038**
Tucker, M. J., and L. Draper, high-Q RC feedback filter, **49**
Tucker, R. W., and S. D. Brookend, leakage resistance of capacitors, **2321**
Turkin, V. K., and G. A. Levin, detection of f.m. oscillations, **2521**
Turnbull, A. G., with others, distortion of E layer by electrical currents, **752**
Turner, D. R., anode behaviour of Ge in aqueous solutions, **3785**
Turner, R. D., diffraction of pulse by half-plane, **3703**
Turner, W. J., photoemission from Ag into NaCl etc., **2757**
Turov, E. A., conductivity of ferromagnetic metals at low temperatures, **822**
—— with others, quantum theory of ferromagnetism, **727**
Turover, Ya. M., and N. I. Strutinski, application of Tchebycheff polynomials, **3630**
Tweet, A. G., properties of grain boundaries in Au-doped Ge, **469**
Twisleton, J. R. G., magnetron Q-measuring apparatus, **2493**
Twiss, R. Q., magnetron theory, **(D)1586**
—— with R. H. Brown, correlation between photons in coherent beams of light, **1666**
Tye, R. P., with others, conductivities of carbon, **2422**
Tyler, W. W., and H. H. Woodbury, scattering from doubly charged impurity sites in Ge, **3430**
—— with H. H. Woodbury, properties of Ge doped with Mn, **1091**
—— with others, photoconductivity in Mn-doped Ge, **3435**

U

Ubbelohde, A. R., with W. W. Harpur, conductance mechanisms in CdI, **1103**
Uchida, E., CoTe, magnetic properties of, **488**, ferromagnetism of, **3808**
—— and H. Kondoh, magnetic properties of NiTe, **2813**
—— H. Kondoh, and N. Fukuoka, magnetic and electric properties of MnTe, **2812**
Uchikura, K., with others, field strength of wave reflected from ionosphere, **900**
Uchrin, G. C., transistor power converter, **1555**
Ueda, R., with B. J. Kobayashi, X-ray study of ferroelectric $PbTiO_3$, **786**
Uemura, Y., coupled dislocations along grain boundary, **1762**
Uesugi, Y., with others, diffraction effect of mountains for v.h.f. radiocommunication **1859**
Ufiyand, Yu. S., with others, e.m. field of linear radiator inside parabolic reflector, **3650**
Uhlir, A., Jr, micromachining with virtual electrodes, **1148**; p-n junctions, shot noise in, **2123**, for frequency conversion, **3897**; electrolytic shaping of Ge and Si, **2432**
Ulbrich, R., with others, breakdown field strength in dielectric liquids, **2463**
Ulbricht, G., with H. Muth, portable R/T sets, **1550**
Ulrich, W., with B. J. Yokelson, multistage diode logic circuits, **2303**
Unger, H. G., propagation of waves on dielectric tubes, **21**
Upham, J. L., Jr, and A. I. Dranetz, transistor modulator for airborne recording, **3181**
Urban, P., with E. Ladinegg, cavity resonators with non-orthogonal boundaries, **685**
Urbarz, H., measurement of Q of cavity resonators, **3141**
Uredat, E., technology of 120-kW triode Type RS528, **3588**
Urquhart, H. M. A., and J. E. Goldman, magnetostrictive effects in antiferromagnetic haematite, **2816**
Ursch, R. H., with L. F. Kilham, Jr, transformer miniaturization using fluorochemical liquids, **1976**
Use, G., radio interference in Germany and other countries, **2528**
Usui, R., with others, transmission of microwaves over sea, **3861**
Uvarov, A. I., with others, input resistance and reactance of transistor amplifier, **3474**
Uyeda, H., and Y. Nakata, selective fading on f_{xt} traces, **3863**
—— T. Kitsunezaki and Y. Arima, divergence factor of wave reflected from ionosphere, **1849**
—— and others, field strength of wave reflected from ionosphere, **900**
Uzan, R., with G. Mesnard, thermionic emission from sintered mixtures, **945**; effect of Zr on sintered oxide cathodes, **946**; sintered capillary cathodes, **3585**
Uzunov, I., with others, self-sustained electronic spokes in magnetrons, **1587**

V

Vail, F. T., with others, ferrite modulator using feedback, **3015**
Vainshtein, L. A., diaphragms in waveguides, **1301**; diffraction at parallel-strip grating, **1380**
Valdes, L. B., frequency response of transistors with drift fields, **1577**
de Valencé, L. P., instability of photomultipliers, **610**
Valensi, G., polarization filters and correctors, **1299**
Valentiner, S., In alloys, **188**
Valeriani, M., with M. Soldi, transistor circuit for resonance-coefficient multiplier, **1013**
Vallée, R., integration of Maxwell's equations, **2697**
Valloton, J., with J. Bauer, coaxial-cable carrier-current systems, **908**
Vanasse, G. A., with H. A. Gebbie, interferometric spectroscopy in far infrared, **3687**
Vanavermaete, A., measurement of low alternating voltages, **1487**
—— with others, plasmagraph for studying electric discharges, **532**
Vandakurov, Yu. V., electron-optical equations for wide beams, **2509**
Van Den Beukel, A., acousto-electric effect, **2678**
Vanhuyse, V. J., resonance frequencies in corrugated waveguide, **1302**
Van Kampen, N. G., stationary waves in plasmas, **2029**
Van Kranendonk, J., spin-deviation theory of ferromagnetism, **1368**, **2025**
Van Nice, R. I., with R. W. Roberts, i.d./o.d. ratio of toroidal cores, **996**
VanOrmer, D. D., with others, improvements in colour kinescopes, **1567**
Van Uitert, L. G., low magnetic saturation ferrites, **1136**; Ni-Cu ferrites for microwave applications, **3809**
—— with S. S. Flaschen, low-contact-resistance electrode, **2124**
—— with others, ferromagnetic resonance in Mg-Mn-Al ferrite, **491**
Varbanski, A. M., sequential system of image transmission in colours, **582**; Moscow colour television experiments, **1560**
Varićak, M., and B. Vošicki, measurement of Penning gauge characteristics, **440**
Vartanian, P. H., and J. L. Melcher, broadband microwave frequency meter, **1496**
—— with others, energy concentration in ferrite-loaded waveguides, **1615**; frequency doubling in ferrites, **2138**
Vasenin, F. I., thermoelectric properties, of Bi-Te alloys, **166**; of Sb-Te alloys, **2126**
Vasil'ev, G. A., with others, electromechanical stabilizer for klystron frequency, **58**
Vasil'eva, N. P., design of push-pull magnetic power amplifiers, **2672**
Vasseur, J. P., principles of transistor circuits, **1984**; circuits using junction transistors, **2675**
de Vaucouleurs, G, with F. J. Kerr, Magellanic clouds, motions of, **1702**, masses of, **2709**
Vaughan, J. R. M., klystron modulation and Schlomilch series, **1592**; mini-A magnetron, **2580**
Vaughan, T. B., with others, injection phenomena in proton synchrotron, **2860**
Vaugois, B., influence of age on cm-λ radiation from solar centres, **411**
Vauthier, R., optics of electric charges and mass spectrometry, **1846**
Vautier, R., magnetostriction and permeability of Mn-Zn ferrites, **3458**
—— with others, reduction of eddy-current losses in ferrites, **3457**
Vecchiacchi, F., propagation tests at 1000 Mc/s, **3522**
van der Veen, B., equivalent network of crystal with divided electrodes, **2653**
Veigel, N. D., E. M. Sherwood, and I. E. Campbell, preparation of high-purity thorium, **2149**
Velth, W., energy distribution of electrons in beam with space charge, **940**
Veksler, A. Z., photoelectric emission in ferromagnetic material, **1059**
—— with others, photoelectric effect in metals, **373**
Veldstra, J. M. M., v.h.f. phase transmitter/receiver for 4-channel telephony, **1209**
Velikin, Ya. I., Z. Ya. Gel'fmut and E. V. Zelyakh, piezoelectric high-pass filter, **48**
Venerovski, D. N., with V. S. Mikhalevski, generation of oscillations by travelling-wave valve, **1591**
Venevtsev, Yu. N., and G. S. Zhdanov, X-ray structural investigation of ferroelectrics, **2770**
Venkitaraman, K., ground-wave propagation, **891**
Venkiteshwaran, S. P., with others, radar observations of rain at Poona, **127**
Venzke, G., form of reverberation chambers, **2946**
Verbitskaya, T. N., nonlinear properties of ferroelectrics, **2770**
Vereshchagin, E. M., quadrature amplitude-phase modulation, **257**
Vereshchagin, L. F., and A. I. Likhter, dependence of Hall effect in Bi on pressure, **500**
Verma, J. K. D., and R. Roy, polarization of echoes from ionosphere, **2384**
—— with R. Roy, polarization of e.m. waves in ionosphere, **1526**
Vernier, P., limitation of magnitudes attained by electron telescope, **2188**
Vernotte, P., experimental laws, smoothing of, **2345**, successive derivation of, **2676**
Veronesi, P., with L. Ferretti, influence of magnetic field on h.f. gas discharge, **716**
—— with others, fast sweep circuit, **698**
Veselago, V. G., with others, increasing Q factor of cavity resonator, **348**
Veselovski, P. F., measurements on solid dielectrics at cm λ, **1155**
—— and A. I. Shitsker, relaxation processes in polyvinyl acetate, **1477**
Vestine, E. H., with S. E. Forbush, sudden commencements of magnetic storms at Huancayo, **415**
Vi-Cheng Lui. See Lui, Vi-Cheng.
Vick, F. A., Hall effect and related phenomena, **95**; new thermionic cathodes, **2582**
Vickers, D. O., with R. Cade, e.s. centre of conductor, **2350**
Vigurs, R. F., with others, suppressed-frame system of telerecording, **918**
Villard, O. G., Jr, and others, meteor ionization trails, in extended-range v.h.f. propagation, **236**, oblique reflections from, **3509**
—— with others, aspect-sensitive radio reflections from ionosphere, **1527**
Villars, F., and V. F. Weisskopf, scattering of radio waves by turbulent fluctuations, **244**
Ville, J. A., extrapolation of signals with limited spectrum, **2216**
—— and J. Bouzitat, signal limited in time and frequency, **1206**
Villepelet, J., signal interference in radiocommunication systems, **2222**
Villers, G., with C. Guillaud, effect of substituting Al^{3+} ions for Fe^{3+} ions on magnetic properties of compounds, **3451**
—— with others, influence of alkali ions on Mn-Zn ferrites, **3121**
Vincent, C. H., the gas multiplier, **1922**; phase-angle measurement, **2484**
Vink, H. J., with others, zone melting of decomposing solids, **145**
Vinokurov, L. A., with V. V. Antonov-Romanovski, reduction of luminous output of phosphors, **3079**
Virbal, P. A., with F. J. Euler, cineontgenography, **3174**
Viswanathan, A., thickness and structure of Cu-Be films, **2458**
Vlasov, K. B., with others, quantum theory of ferromagnetism, **727**
Vlasova, R. M., and L. S. Stil'bans, thermoelectric properties of Bi_2Te_3, **1083**
van Vliet, K. M., and J. Blok, noise in semiconductors, **3796**
Vogan, E. L., with others, variations in number of shower meteors detected by forward scattering, **1046**; dependence of meteoric forward-scattering on aerial patterns, **1198**
Vogel, H., with K. W. Böer, nonstationary processes in photoconductors, build-up in CdS, **1061**
Vogel, T., acoustic properties of materials, **3622**
Vogelsong, J. H., with Q. W. Simkins, transistor amplifiers for digital computers, **1014**
Vogler, L. E., with others, probability distribution of constant vector plus Rayleigh-distributed vector, **197**, **234**; propagation through turbulent atmosphere over irregular terrain, **242**
Vogt, E., with C. Herring, theory for many-valley semiconductors with anisotropic scattering, **2423**
Vogt, K., with M. Corsepius, observations with TOM equipment at Frankfurt, **2533**
—— with B. Beckmann, observations of s.w. back-scatter, **896**
—— with W. Kronjäger, fluctuations of direction of arrival of short waves, **1201**
Vol'f, V. M., nonlinear distortions of complex oscillations, **2012**
Volger, J., and J. M. Stevels, polarizability of colour centres in quartz and glasses, **2768**
—— J. M. Stevels and C. van Amerongen, dielectric losses of quartz, **451**
Volin, M. L., trailing edge of pulse in cathode follower, **3683**
Volland, H., solar-eclipse effects on earth's magnetic field, **3722**
Von Foerster, H. M., with M. Weinstein, space-charge effects in velocity-modulated beams, **2909**
Vonsovski, S. V., multi-electron theory of semiconductors, **3415**
—— A. V. Sokolov and A. Z. Veksler, photoelectric effect in metals, **373**
—— K. B. Vlasov and E. A. Turov, quantum theory of ferromagnetism, **727**
Voorhies, H. G., with others, 300 MeV electron synchrotron, **874**
Vošicki, B., with M. Varićak, measurement of Penning gauge characteristics, **440**
Vousden, P., structure of $BaTiO_3$ and TiO_2, **2773**
Vowels, R. E., solution of cascaded four-terminal networks, **1642**
von Vultée, J., intergrowth of rutile in quartz, **2460**

W

Waché, X., with G. Guiot-Guillain, analysis of Sm ferrite, **184**
Wada, M., with others, magnetic storms, solar phenomena and cosmic-ray storms, **1708**
Waddell, J. M., S. E. Mayer and S. Kaye, Ge diffused-junction photocell, **615**
Wade, F., with W. Abson, nuclear-reactor control ionization chambers, **3838**
Wade, G., and N. Rynn, coupled helices in travelling wave valves, **1253**
—— with E. W. DeGrasse, electron-beam noisiness for field-emission cathode, **3582**
van Wageningen, J. H., communications receiver Type BX925A, **3527**
Wagoner, G., with others, cyclotron resonance in Ge-Si alloys, **1456**
Wahl, A. J., and J. J. Klemosk, reliability of alloy-junction transistors, **2243**
Wainfan, N., with others, photoelectric yields in the vacuum ultraviolet, **1058**
Wait, J. R., scattering from lossy strip on conducting plane, **90**; radiation characteristics of slots on cylinder, **331**; radiation resistance of dipoles at interface, **1958**; transient fields of dipole over curved ground, **1959**; radiation pattern of aerial on surface of large radius of curvature, **2296**; radiation from dipole in presence of cylinder, **2960**; radiation from vertical aerial over curved ground, **3190**; waveform of atmospheric, **3385**
—— and H. H. Howe, ground-wave propagation at 200 c/s-500 kc/s, **3516**
—— and K. Okashino, patterns of stub aerials, **2624**
—— and R. E. Walpole, radiation characteristics of slots, **2962**
—— with D. G. Freed, slot radiators in rectangular plates, **1309**
Walbank, W. M., with others, Si-junction power diodes, **3889**
Walcher, W., with R. Hofmann, calculation of time functions for broken rational transform functions, **1151**
Waldron, R. A., ferrites in resonant cavities, **2658**
Waldron, R. D., infrared spectra of ferrites, **833**
Walker, J., with R. J. Cox, control of nuclear reactors, **3838**
Walker, L. R., power flow in electron beams, **300**
—— with J. R. Pierce, growing waves due to transverse velocities, **1906**
—— with others, line width in ferromagnetic resonance, **2033**
Walker, R. M., with others, spin-echo storage, **1038**
Walker, W. C., N. Wainfan and G. L. Weissler, photoelectric yields in the vacuum ultraviolet, **1058**
Wall, R. E., Jr, and A. E. Harrison, broad-band microwave frequency spectrum, **1806**
Wallauschek, E., unipolar conduction at semiconductor/metal boundary, **791**
Wallenfang, K., with others, quality of ferrites for computers, **1629**
Wallis, G., measurements on caesium-antimony layers, **3749**
Wallman, H., automatic noise-factor meter, **1498**
Walpole, R. E., with J. R. Wait, radiation characteristics of slots, **2962**

Walsh, D., electron affinity of hydrogen, **1357**
—— A. W. Bright and T. J. Bridges, electrode deterioration in t.r. switches, **2252**
—— with others, pre-pulse instabilities in t.r. switch, **2251**
Walsh, J. L., and M. Zedek, generalized Tchebycheff polynomials, **2830**
Walsh, J. R., with others, atmospheric temperatures and winds, **2376**
Walshaw, C. D., and R. M. Goody, investigation of ozone band in solar spectrum, **3725**
Walter, C. H., with B. T. Stephenson, end-fire slot aerials, **1306**
Walton, S., with J. Lees, influence of pressure on metal/Ge contacts, **1095**; surface states on Ge, **1767**
Waltz, W. R., with R. S. Shultz, functional divisions for electronic equipment, **1267**
Wang, T. C., with K. Shimoda, hyperfine structure of NH_3, **1693**
—— with others, theory of maser, **3710**
Waniek, R. W., with H. P. Furth, production of high transient magnetic fields, **3030**
Wanmaker, W. L., with J. L. Ouweltjes, nonstoichiometry in oxygen-dominated phosphors, **3397**
Wannlund, A. L., with others, recent developments in Si fusion transistors, **926**
Warbanski, A. M. See Varbanski, A. M.
Warburton, J. A., with W. N. Christiansen, distribution of radio brightness over sun, **1706**
Ward, H. T., W. O. Puro and D. M. Bowie, artificial dielectrics with voids, **1437**
Ward, R., with S. Terol, perovskite-type ternary oxides as luminophors, **1065**
Ward, W. H., time signals for determination of longitude, **3515**
Wareham, E. M., slotted-section standing-wave meter, **859**
Warnecke, R., and others, carmatron wide-band oscillator, **620**
Warnecke, R. J., with D. Charles, hydrogen thyratron, **2926**
Warner, A. W., with others, dislocations etc. of crystal quartz, **2826**
Warner, A. W., Jr, with others, experimental evidence for dislocations in quartz, **842**
Warren, R. W., measurement of fields in glow discharges, **390**
Warzecha, T. D., telemetry demodulator for wide-band f.m., **3178**
Wasilik, J. H., with R. K. Cook, anelasticity and dielectric loss of quartz, **3811**
Wass, C. A. A., An Introduction to Electronic Analogue Computers, **(B)2976**
Watanabe, H., magnetism of (La, Sr) FeO_3 ferrites, **2822**
Watanabe, K., F. F. Marmo and J. Pressman, formation of lower ionosphere, **1407**
Watanabe, S., and N. L. Olesen, travelling density waves in positive columns, **714**
—— with others, effects of Bi_2O_3 on ferrites, **832**
Waterhouse, R. V., and R. K. Cook, recording sound transmission loss of walls, **655**
—— with others, measurement of correlation coefficients in reverberant sound fields, **1284**
Waters, G. S., measurement of earth's magnetic field by nuclear induction, **414**
Waters, W. P., with others, recent developments in Si fusion transistors, **926**
Watkins, A., automatic control of power equipment for telecommunications, **2543**
Watson, K. M., and K. A. Brueckner, study of ionized gases, **2692**
Watt, W., with others, conductivities of carbon, **2422**
Watters, R. L. and G. W. Ludwig, minority-carrier lifetime in Si, **3094**
—— with G. W. Ludwig, drift mobility in Si, **2790**
Wayman, P. A., daily maps of sun, **2041**
Waymouth, J. F., and F. Bitter, field-induced colour shift in ZnS, **3398**
Waynick, A. H., lowest ionosphere, **755**
Weaver, J. T., with B. W. Currie, vertical extent of auroral arcs and bands, **1420**
Webb, A. L. C., and A. Ellett, phonevision subscription television, **1223, 2547**
Webb, J. H., pulses applied to silver halide crystals, **1057**
Weber, W., C. W. Johnstone and L. Cranberg, measurement of μs time intervals, **2835**
Webley, R. S., H. G. Lubszynski and J. A. Lodge, half-tone charge-storage tubes, **2590**
Webster, J. C., and L. Sharpe, improvements in message reception, **1287**
—— and L. N. Solomon, response complexity in listening to competing messages, **1288**
—— P. O. Thompson and H. R. Beitscher, acoustic attenuation of ear protective devices, **3618**
—— with W. Spieth, listening to filtered voice messages, **650**
Wedepohl, P. T., with H. B. Dyer, electrical measurements on type-IIb diamonds, **2785**
Weekes, K., with S. Gnanalingam, D-region echoes at 1.4 Mc/s, **755**
—— with others, motion of cylindrical irregularity in ionized medium, **755**
—— with others, radio observations on 23rd February 1956, **2717**
van Weel, A., phase-linear television receivers, **594, 2235**; r.f. characteristics of television receivers, **2892**; error sources in group-delay measurements, **3477**
—— with C. J. Heuvelman, group-delay measurements, **2482**
Weibel, E. S., Webster's horn equation, **2**; vowel synthesis by resonant circuits, **651**
Weides, E., with others, quality of ferrites for computers, **1629**
Weill, G., e.m. field at junction of three media, **88**; diffraction of surface waves and theory of dielectric aerial, **2616**
Weill, J., with M. Brière, vibrating-capacitor electrometer, **855**
Weinstein, M., and H. M. Von Foerster, space-charge effects in velocity-modulated beams, **2909**
Weis, A., h.f. impedance of chokes, resistors and capacitors, **33**
Weisbaum, S., and H. Boyet, double-slab ferrite isolator, **1994**; broadband nonreciprocal phase shifts in rectangular guide, **2959**
—— and H. Seidel, field-displacement isolator, **3675**
Weise, A. A., diffusion coefficients of meteor trails, **100**
Weisliitzer, J., with P. Rohan, compensation of wide-band amplifiers, **1010**
Weiss, H., with O. G. Folberth, preparation and properties of InP and GaAs, **3107**
Weiss, R. J., and K. J. Tauer, thermodynamic functions of iron, **3807**
Weissfloch, A., Schaltungstheorie und Messtechnik des Dezimeter- und Zentimeterwellengebietes, **(B)1015**
Weisshaar, E., magnetic blocking layers in Ge, **2114**
Weisskopf, V. F., with F. Villars, scattering of radio waves by turbulent fluctuations, **244**
Weissler, G. L., with A. W. Ehler, ultraviolet absorption of atomic nitrogen, **2013**
—— with others, photoelectric yields in the vacuum ultraviolet, **1058**
Welch, A. B., with S. W. Levine, electronic engraving, **2190**
Welch, P., with others, valves of improved quality for government and industrial purposes, **(D)617**
Welker, H., optical and electrical properties of GaAs, InP and GaP, **145**
—— with others, magnetic blocking layer in semiconductors, **2100**
Welkowitz, W., directional circular arrays, **2937**
Wells, P. I., with H. B. Janes, tropospheric scatter-propagation measurements, **234**
Wendt, G., resolving power of image converter, **1918**; first-stage focusing of photomultiplier tube, **3248**
Wentworth, J. W., Color Television Engineering, **(B)3557**
Wentzel, V., electronic function generator, **1967**
Werner, P. H., sapphire and diamond needles, **1610**
Wert, C., with J. Kerr, effect of nitrides on coercive force of iron, **482**
Wesley, A. C., X-ray production by magnetron, **943**
West, J. C., J. L. Douce and R. K. Livesley, analysis of nonlinear feedback systems, **3223**
West, R., with K. W. Plessner, $BaTiO_3$ with Si and Ge, **1737**
Westfold, K. C., with S. Chapman, solar and lunar atmospheric tides, **2068**
Westpfahl, K., diffraction of e.m. waves by plane screens, **399**
Westphal, W. C., with J. R. Haynes, recombination radiation from Si, **2789**
Westwood, D. J. S., with S. E. Gent, vision a.g.c. system, **281**
Wetherell, A. M., with G. Fidecaro, design of distributed amplifiers, **2670**
Whale, H. A., effective tilt of ionosphere, **2723**; antipodal area in s.w. propagation, **3859**
—— and W. J. Ross, automatic direction finder for recording rapid fluctuations, **2744**
Whalley, W. B., and R. S. O'Brien, colour video switching, **2554**
Wheatley, G. H., with others, Hall effect and conductivity of InSb, **1772**
Wheelon, A. D., near-field corrections to line-of-sight propagation, **234**; scatter propagation with modified exponential correlation, **234**
—— and R. B. Muchmore, line-of-sight propagation phenomena, scattered components, **234**
—— with R. B. Muchmore, line-of-sight propagation phenomena, ray treatment, **234**
Whinnery, J. R., with M. R. Currie, cascade backward-wave amplifier, **624**
Whitcraft, W. A., Jr, with others, ionospheric scatter techniques, **3185**
White, C. E., how loud is silence? **2604**
White, E. A. D., twinning in $BaTiO_3$ crystals, **2085**
—— with B. Lewis, Na-Cd niobates, **3401**, solid-solution effects and ferroelectricity in, **2087**
White, J. R., with R. P. Burr, computer gives tristimulus values, **70**
White, M. L., with H. K. Sen, excitation of gravitational oscillations, **1404**
White, R. E., travelling-wave valves, **2257**
White, R. W., and J. S. Whyte, measurement of interchannel crosstalk, **2167**
—— with I. A. Ravenscroft, frequency modulator for radio relay systems, **286**
—— with others, v.h.f. propagation by ionospheric scattering, **1860**
White, W. D., and J. G. Greene, noise temperature of gas-discharge noise generators, **3146**
Whitfield, G. R., with B. Elsmore, lunar occultation of radio star, **97**
Whitmer, R. F., nonrotationally symmetrical e.s. lenses, **3848**
Whitworth, J. R., u.h.f. satellite operation, **2553**
Whyte, J. S., measurement of v.h.f. network characteristics, **217**
—— with R. W. White, measurement of interchannel crosstalk, **2167**
Widdra, H., with H. Fleischer, frequency-band recorder, **2175**
Wieder, B., propagation over 1150-km E-W path, **1523**
Wieder, H. H., $BaTiO_3$, at low temperature, **454**, ferroelectric hysteresis in single crystals of, **1438**, retarded polarization in, **2766**
Wiesner, J. B., with others, u.h.f. long-range communication systems, **263**
Wiesner, R., and E. Groschwitz, temperature dependence of photocurrent in Ge p-n junctions, **1097**
van Wijk, A. M., magnetic effects during solar eclipses, **416**
Wild, J. P., and J. A. Roberts, spectrum of radio-star scintillations and irregularities in ionosphere, **2058**
Wilde, H., measurements of reversible permeability, **1469**
Wildermuth, K., self-acceleration of electrons, **2014**
Wilkes, A., W. Hopwood and N. J. Peacock, mechanism of breakdown in hydrogen, **387**
Wilkins, A. P., and C. M. Minnis, arrival angle of h.f. waves, **1200**
Wilkins, F. J., and S. Harkness, electronic supply for calibration of instruments, **1554**
Wilkinson, J. H., optimum coding on pilot ACE, **670**; electronic computing machines, **986**
Williams, A. J., with others, anisotropy and magnetostriction of ferrites, **831**
Williams, B. E., with others, study of gold films, **836**
Williams, F. E., with J. S. Prener, associated donor-acceptor luminescent centres, **2405**
—— with others, effect of electron traps on electroluminescence, **3755**
Williams, F. K., with others, circuits used in digital automation, **2638**
Williams, H. J., R. D. Heidenreich and E. A. Nesbitt, Co ferrite heat-treated in magnetic field, **1788**
—— with E. A. Nesbitt, shape and crystal anisotropy of alnico 5, **825**
Williams, M. B., and J. B. Sewter, circuits for television outside broadcasts, **2545**
Williams, R. W., with G. M. Parker, magslip ingraph, **334**
Williams, W. E., diffraction by a cylinder, **3269**
Williamson, M. E., and S. E. Rodby, low-power telecasting, **1568**
Willis, C. H., with others, optimum core shape for magnetic amplifiers, **340**
Willis, J., and N. K. Sinha, nonuniform lines as impedance-matching sections, **664, 1614**; impedance transformers, **3277**
Willoughby, E. O., wide-band and folded aerials, **2622, 3640**
Wills, G. M. B., with A. D. Hodgson, microwave system in Canada, **2890**
Willson, A. J., with J. W. Dungey, viscosity in F region, **1410**
Wilmot, P. D., chlorinated diphenyl capacitors, **1320**
Wilshire, H. R., characteristics of pentagrid converter valve, **3590**
Wilson, W. P., rejector circuit, **(D)2664**
Winkler, G., propagation of plane waves in plasma, **731**
Winkler, U., intermetallic compounds with Mg, **1753**
Witt, B. J., with others, coherent M.T.I. radar on 50 cm, **3387**
Witt, S. N., Jr, transistorizing Meacham-bridge oscillators, **1654**
Wohl, R. J., with others, cathode-ray recorder, **2263**
Wöhle, W., sound level in corners of rooms, **3620**
Wohlfarth, E. P., ferromagnetic particles, remanence curve of, **496**, effect on coercive force of, **827**; remanent magnetization of barnetite, **1129**
Wojaczek, K., with K. Rademacher, cathode fall in glow discharge, **2358**
Wolf, J., colour television system with two subcarriers, **3542**
—— with W. Dillenburger, equipment for single photographs of television pictures, **586**
Wolfe, B., specific noise of PbS photodetectors, **2249**
Wolfe, R., with I. G. Austin, properties of semiconducting diamond, **2784**
Wolff, G. A., R. A. Herbert and J. D. Broder, electroluminescence of GaP, **1433**
Wollan, E. O., and W. C. Koehler, magnetic properties of compounds $(1-x)La_{1-x}Ca_xMnO_3$, **1114**
Wollenberger, H. H., with A. Kussmann, powder patterns in high-coercivity alnico, **3805**
Wollentin, R. W., Pb- and Mn-activated cadmium fluorophosphate phosphors, **2408**
Wong, J. Y., radiation patterns of slotted elliptic-cylinder aerials, **2629**; theory of coaxial line with elliptic conductors, **3631**
Wong, S. Y., high-density Williams storage, **3288**
Wood, C. B. B., and others, suppressed-frame system of telerecording, **918**
Wood, J., c.r.o. beam-brightening device, **860, (D)3491**
Wood, J. K., relay-operated accumulator, **2639**
Wood, K. E., and I. V. Hansford, flutter computer with low-gain amplifiers, **335**
—— and T. C. Keenan, multi-trace c.r. tube display, **1823**
Woodbury, H. H., and W. W. Tyler, properties of Ge doped with Mn, **1091**
—— with W. W. Tyler, scattering from doubly charged impurity sites in Ge, **3430**
—— with others, photoconductivity in Mn-doped Ge, **3435**
Woodford, J. B., with others, tapered strip line for pulse transformer, **993**
Woodman, H. F., and P. H. J. Taylor, facsimile communication, **2190**
Woods, J., and D. A. Wright, field-enhanced luminescence in MgO, **138**
Woods-Hill, W., television signal recording, **1561**; e.s. pulse generator, **1632**; multiple pulse-stream generator, **2972**
Woodward, O. M., Jr, and J. Gibson, omniguide television aerial, **2297**
Wooster, W. A., with S. C. Prasad, elastic constants, of Si, **152**, of Ge, **475**
Wooten, L. A., G. E. Moore and W. G. Guldner, excess Ba in oxide cathodes, **301**
—— with others, excess Ba content of oxide cathodes, **302**
Wootton, D. J., and A. F. Pearce, klystron oscillator for 8-9 mm λ, **2579**
Wörner, H., stability of Se photocells, **613**
Woschni, E. G., gain characteristic inside pull-in range, **3560**
Wray, D., with J. B. Sewter, balanced equalizer-amplifier for transmitting video signals, **275**
Wright, D. A., and J. Woods, field-enhanced luminescence in MgO, **138**
Wright, F. H., and S. A. Zimmermann, radio influence voltages in fluorescent lighting systems, **3209**
Wright, G. T., with T. D. S. Hamilton, transit-time spread in electron multipliers, **2247**
Wright, H., television studio practices relative to kinescope recording, **2549**
Wright, K. H. R., with L. Grunberg, structure of abraded metal surfaces, **1028**
Wright, R. W., J. R. Koster and N. J. Skinner, spread F-layer echoes and radio-star scintillations, **2731**
—— with N. J. Skinner, recombination and ion production, **113**; equatorial ionospheric absorption, **3855**
Wright, W. L., microwave television transmission systems, **578**
Wright, W. V., with others, recent developments in Si fusion transistors, **926**
Wright, W. W., with others, valves of improved quality for government and industrial purposes, **(D)617**
—— with B. D. Mills, rating valves for use under abnormal conditions, **937**
Wucher, J., with others, induced ferromagnetism by addition of Li ions to NiO, **2454**
Wulf, O. R., with S. B. Nicholson, diurnal variation of geomagnetic fluctuations, **1403**
Wulfsberg, C. N., Zener-voltage breakdown in Si diodes, **923**
Wylen, J., with others, magnetic-core circuits for digital systems, **1313**
Wyluda, B. J., with R. G. Shulman, Cu in Ge: recombination and trapping centres, **3781**
Wyman, J. H., with others, 3-mm-λ radiation from the sun, **740**

Y

Yadav, R., peak limiting amplifiers, **699**
Yadavalli, S. V., geometrical optics and electron-trajectory calculations, **394**
Yager, W. A., J. K. Galt and F. R. Merritt, ferromagnetic resonance in Ni-Fe ferrites, **492**
—— with others, frequency dependence of magnetocrystalline anisotropy, **835**; quantum effects in cyclotron resonance, **1093**
Yamada, O., irreversible magnetic after-effect, **1123**
—— with A. Kussmann, coercive force and after-effect of permanent magnets, **2823**
Yamaka, E., and K. Sawamoto, photo-induced Hall effect in MgO, **2115**
Yamamoto, K., and T. Okuda, floating-probe method for measurement of ionized gas, **2687**
Yamamoto, M., formula for ferromagnetic anisotropy constant, **481**
—— S. Taniguchi and K. Aoyagi, domain structure in cubic solid solutions, **3802**
Yamamoto, T., K. Tani and K. Okada, energy dissipation of conduction electrons, **3020**
Yamashita, J., theory of electron multiplication in Si, **3093**
Yanoshi, L. See Jánossy, L.
Yarosiavski, M. I., piezoelectric resonators with crystals having defects, **2770**
Yasuhara, H., with others, geomagnetic variations during solar eclipse, **2045**
Yasuoka, Y., space charge affected by magnetic field, **2575**
Yates, J. G., with others, electron-trajectory tracer, **3833**
Yatsenko, A. F., with others, fusion of $BaTiO_3$ by conduction, **2770**
Yavor, S. Ya., focusing properties of cylindrical magnetic lenses, **1510**
—— with V. M. Kel'man, cylindrical magnetic lenses, **2508**
Yerg, D. G., observation of ionospheric drift, **2728**
Yin-Yuan Li. See Li, Yin-Yuan.
Yokelson, B. J., and W. Ulrich, multistage diode logic circuits, **2303**
Yokota, M., paramagnetic relaxation, **1031**
Yokoyama, A., with T. Hashimoto, decrease of grid emission by improvement of electroplating, **632**
Yokoyama, I., with others, effect of solar eclipse on ionosphere, **1716**
Yonezawa, T., F₂ Layer, mechanism of electron removal in, **114**, influence of diffusion on, **751, 1712**, formation of, **3049**
Yoshida, N., with others, studies on diffracted waves from mountain, **898**
Yoshida, S., and others, dissociation of BaO under electron bombardment, **3260**
Yoshimatsu, S., and others, influence of infrared rays on photoconductivity of CdS, **130**
—— with S. Ibuki, photoconductivity of stibnite, **479**
Yoshinaga, H., reflectivity of crystals in the far infrared, **1077**
—— and R. A. Oetjen, optical properties of InSb, **2118**
Young, D. R., with others, polarization reversal in $BaTiO_3$, **3759**
Young, J. E., propagation of sound in elastic shells, **1274**; heat conduction losses in acoustic boundary layer, **1279**
Young, J. R., measuring screen potential of c.r. tubes, **204**; deterioration of phosphors under positive-ion bombardment, **1070**; penetration of electrons and ions in Al, **1676**
Young, R. E., with F. Exley, grounded-grid valve system, **2589**
Yu, S. P., and A. H. Morrish, torsion balance for microscopic magnetic particle, **2155**
—— with A. H. Morrish, coercive force of iron-oxide powders, **170**; measurements on ferrite particles near single-domain size, **3455**
Yu, Y. P., measuring phase at r.f., **1166**
Yuhara, H., J. Ishida, and M. Higashimura, amplitude probability distribution of atmospheric noise, **3135**
Yunovich, A. E., with S. G. Kalashnikov, variation of conductivity of Ge by external field, **1448**
Yurin, V. A., with I. S. Zheludev, properties of ferroelectric-salt crystals exposed to irradiation, **2770**
—— with others, polarization of Rochelle salt exposed to radioactive irradiation, **143**
Yurkov, B. Ya., application of matrix method to radio engineering, **2994**
Yuzhakov, V. M., specific charge of electrons, **2015**

Z

Zaffarano, D. J., with W. A. Rhinehart, pulse-height measurement, **2844**
Zagajewski, T., linear and nonlinear effects in reactance and oscillator circuits, **53**
Zaitsev, G. A., description of e.m. field by matrices, **85**
Zakovsky, J., with J. Braunbeck, dependence of barrier-layer photoeffect on X radiation, **1245**
Zancanata, H. W., with M. S. Redden, Jr, telemetering receiver conserves bandwidth, **2526**
Zanella, V. J., ground-to-air aerial uses helical array, **1621**
Zaslavskaya, I. G., with K. B. Tolpygo, bipolar diffusion in semiconductors, **1752**
Zavolski, E. K., and S. D. Fanchenko, electron-optical chronography, **3502**
Zawels, J., equivalent circuit of junction transistor, **607**
Zedek, M., with J. L. Walsh, generalized Tchebycheff polynomials, **2830**
Zega, B., with others, influence of alkali ions on Mn-Zn ferrites, **3121**
Zeiger, H. J., with others, the maser, **403**
Zelyakh, E. V., with others, piezoelectric high-pass filter, **48**
Zemanian, A. H., step response of positive real function systems, **3670**
Zetzmann, H. J., Siemens contributions to air-navigation electronics from 1930 to 1945, **1054**
Zhabotinski, M. E., and Yu. L. Sverdlov, operation of amplitude limiter, **3676**
——with others, electromechanical stabilizer for klystron frequency, **58**; increasing Q factor of cavity resonator, **348**
Zhdanov, G. S., with Yu. N. Venevtsev, X-ray structural investigation of ferroelectrics, **2770**
Zheludev, I. S., and V. A. Yurin, properties of ferroelectric-salt crystals exposed to irradiation, **2770**
—— and others, polarization of Rochelle salt exposed to radioactive irradiation, **143**
Zhevakin, S. A., and V. M. Fain, nonlinear effects in ionosphere, **3856**
Zhukova, N. V., accumulation property of ZnS phosphors, **775**; electron levels in ZnS-Cu phosphors, **2758**
Zhuraviev, V. A., with A. I. Andrievski, photoconductivity of SnO_2, **3396**
Zhuze, V. P., heat of formation and electron mobility of semiconductor, **3418**
Zickner, G., adjustable absolute capacitance standard, **1500**; variable capacitors with zero initial capacitance, **3499**
Ziegler, C. A., and H. H. Seliger, hysteresis effect in multiplier phototube noise, **929**
Ziehm, G., difficulties in direction finding on ships, **432**; ferrite aerials in direction finders, **1622**
van der Ziel, A., shot noise in junction diodes and transistors, **600**
—— with others, flicker noise in secondary emission tubes and multi-

plier phototubes, **3587**
Zijlstra, R. J. J., and C. T. J. Alkemade, flicker noise in photoelectric diodes, **3569**
Zil'berman, G. E., thermo- and galvano-magnetic effects, **3038**
Ziman, J. M., electron-phonon interaction, **1355**; effect of free electrons on lattice conduction, **2017**
Zimmermann, S. A., with F. H. Wright, radio influence voltages in fluorescent lighting systems, **3209**
Zinke, O., with others, resistance of sheets, strips etc. at 10 c/s-100 kMc/s, **1634**
Zitter, R. N., with S. W. Kurnick, photoeffects in InSb, **2429**
Zmuda, A. J., adjustment of isomagnetic charts, **2372**
Zomber, G. L., and D. Macmillan, fuel cut-off control for guided missiles, **1186**
van Zoonen, D., double pulses in Geiger counters, **2865**
Zschörner, H., with H. K. Paetzold, observation of 'ozone hole', **417**
Zucker, J., with H. K. Henisch, estimation of resistivity and lifetime of semiconductors, **3824**
Zückler, K., operation of SiC resistors, **2314**
Zverev, V. A., V. M. Bokov and I. E. Lur'e, capacitance analyser of sound field, **964**
—— with A. G. Gorelik, interaction of sound waves, **1939**
Zwicker, E., and R. Feldtkeller, loudness of steady noises, **1604**
Zwislocki, J., design and testing of earmuffs, **1297**
Zyryanov, P. S., theory of conductivity in metals, **1020**; relaxation fluctuations in condensed systems, **2090**

SUBJECT INDEX

A

Absorption, (See also Wave propagation)
acoustic, of carpet, measurement of, **1294**
of materials, determination of, reflection method for, **3622**, reverberation-chamber method for, **966**
of theatre seats and carpet, **1945**
of acoustic and e.m. waves at cm λ, survey of devices for, **3037**
atmospheric. See Atmosphere.
ionospheric. See Ionosphere.
microwave, in compressed oxygen, **734**
cyclotron, in Bi, **1471**
in substituted phenols, **2032**
in superconducting Al, experimental investigation of, **2354**
in superconductors, theory of, **2355**
microwave and u.h.f., in phenol, cyclohexanol and 1-bromo 2-chloroethane, **1692**
spectrum of NO in far ultraviolet, **2347**
ultrasonic, in liquids, reverberation method for measurement of, **1603**
in water, **2932**
ultraviolet, of atomic nitrogen, **2013**
Accelerometers, $BaTiO_3$, and associated equipment developed at the N.B.S., **225**
caged-bobbin type, for measurement of atmospheric drag, **3836**
high-frequency calibration of, use of Michelson interferometer for, **3500**
Acoustics, (See also Absorption; Diffraction; Impedance; Resonators; Sound; Ultrasonics)
air-flow-resistance of materials, apparatus for measuring, **2275**
architectural, survey of, **3615**
of auditoria, comparison of objective and subjective observations on, **11**
reverberation theory for nonuniform distribution of absorptive material in, **3272**
of Berlin State Opera House, **3623**
of broadcasting studios, **969**, **1295**
at Marseilles, **3625**
of concert studios, optimum reverberation time of, **10**
insulation provided by walls, experimental investigation of, **3616**
measurements, correlation coefficients for reverberant fields in, **1284**
models for measurements in, required accuracy of matching of surfaces in, **2947**
reverberation chambers for measurements in, determination of appropriate form for, **2946**
of rooms, importance and measurements of diffusion, **3619**
sound-level variations at corners etc., **3620**
of studios and practice rooms, **1293**
Acousto-electric effect, theory of, **2678**
Aerials, (See also Lenses, microwave)
aircraft, flush-mounted, radiation-pattern calculation taking account of surface curvature, **2296**
microwave, stub, radiation patterns of, **2624**
for telemetering systems, **2623**
wing-cap and tail-cap, current distribution in, **2625**
arrays, broadcasting, giving vertical radiation for use in tropics, **3536**
broadside, use of Poisson's formula for calculating feeding coefficients for, **3645**
broadside and end-fire, optimum continuous distribution of illumination in, **1960**
circular, fixed, for d.f. system, **330**
collinear dipoles, back-scattering cross-section of, **2627**
end-fire, wide-band, for v.h.f. and u.h.f., **1308**
interferometer at Nançay for investigation of solar r.f. sources, **3644**
linear, analysis for, **983**
of magnetic line sources on a conducting half-plane, radiation patterns of, **3642**
ring, with alternative phasing for ground-wave or sky-wave operation, **326**
with rotationally symmetrical characteristics, **982**
Tchebycheff polynomials in calculations for, **3630**
unipole, driving-point impedances of, **1620**
v.h.f., Yagi type with large number of elements, **1961**
biconical, wide-band, **1305**
circular paraboloid, primary feed for, **2626**
with crossed-parabolic-cylinder reflectors, **985**
cylindrical, input conductance of, calculation of, **981**
integral-equation formulation for, **1617**
transmitting, current distribution along, **980**
wide-band and folded, **2622**, **3640**
deviating, for ensuring television coverage, **3641**
dielectric, end-fire, theoretical and experimental investigation of, **2616**
radiation patterns of, calculations of, **3637**
dipole, electric, near corrugated cylinder, radiation field of, **2960**
at interface between dielectrics, radiation resistance of, **1958**
transient fields taking account of earth's curvature, **1959**
vertical, over stratified earth, analysis for field strength due to, **3190**
directive, with curved-surface reflector, analysis for, **2631**
dm-λ, for Austrian radio-link network, **3283**
line source, optimum design of, **984**
with parabolic reflector, theory of, **3650**
with paraboloidal reflector, e.m. field inside, **3648**
far-field calculations for, **3651**
Aerials, directive, with parasitic elements, design and characteristics of, **1310**
u.h.f., using sheet reflectors, **2628**
ferrite, for aircraft d.f., **1622**
helical, for ground-to-air communication, **1621**
induced thermal noise in, **3638**
mast, insulators for, **1618**
m.f., broadcasting, standardized systems for Australian service, **1304**
microwave, aperture radiators, phase centre of, **1962**
Fraunhofer radiation pattern of, simulation in Fresnel zone of, **3643**
horn and dielectric-rod designs, **1963**
periscopic, theory of, **3646**
reflectors for, aperture phase errors in, **332**, **1625**
double-curvature, design and construction of, **1626**
experimental investigation of, **1964**
parabolic-cylinder, design of, **1627**
parabolic-reflector, with sector radiation pattern, **2963**
with parasitic cylinder, radiation patterns of, **1624**
passive, metal strips for reflection of radar signals, **1731**
radiation patterns of, measurements by helicopter of, **328**
for radio astronomy, correction for brightness-distribution smoothing due to, **98**
with raised reflector, radiation characteristics of, **3647**
receiving, measurements on, **668**
Russian terminology for, **2294**
slot, effect of finite plate size on properties of, **1309**
end-fire, design and performance of, **1306**
field distribution of, Mathieu functions in computation of, **2630**
radiation patterns of, calculation of, **2962**
tabulated data for, **1623**
slotted cylinder, radiation characteristics of, **331**
slotted-elliptical cylinder, radiation patterns of, **2629**
s.w., transmitting, flat-top, at Schwarzenburg, winches for, **327**
television, band-I, used for long-range reception in U.S.S.R., **3523**
for bands I and III, **329**
broadcasting, at B.B.C. Crystal Palace station, **3895**
v.h.f., wide-band, for reception of bands I and III, **2295**, using Yagi array with wing dipoles, **1307**
theory of, error in integral-equation method for, **2621**
u.h.f., broadcasting, using octagonal slotted-waveguide system, **2297**
unipole, folded, impedance transforming properties of, **1616**
Aether, theory derived from principle of phase invariance, **371**
Alloys, binary, effect of growth conditions on solidification of, **3146**
Bi-Te, thermoelectric properties of, **166**
covalent, Pr-Ge and Ca-Ge, structure of, **1796**
diamagnetic, Cu, magnetic susceptibility of, **2824**
ferromagnetic. See Ferromagnetic materials, alloys.
Hall effect in, **2437**
Ni-Cr-Al-Cu, 'evanohm', for resistance standards, **3085**
Sb-Te, thermoelectric properties of, **2126**
Altimeters, f.m., high-accuracy, **3746**
Type-AM.210, **3069**
Ammeters. See Meters.
Amplifiers, (See also Circuits)
a.f., cascode-connected cathode-coupled circuit, **2343**
cathode-follower, for matching, design curves for, **3010**
high-gain, using transistor, **1346**
low-power, using Si transistors, **3898**
negative-feedback, noise in, **3009**
peak-limiting, for broadcasting studios, **699**
using transistors, design and performance of, **3324**
as pre-amplifiers for gramophones and microphones, **3323**
'ultralinear', operation of, **701**
output-transformer design for, **677**
cathode-follower, use of triode across output to improve pulse sharpness in, **3683**
d.c., asymmetrical push-pull, **2004**
with automatic drift compensation, **360**
isolating type using fixed-frequency oscillator and phase-modulated discriminator, **3316**
using magnetic modulation of superconducting Ta wire, **518**
modulator using Si-junction diodes for conversion to a.c. in, **1663**
for slow analogue computers, **989**
unity-gain, for voltmeter, **3485**
voltage and current types, **1341**
d.c.-100 kc/s, including direct coupling and chopper, **3315**
dielectric, optimum working point for, curves for determining, **2649**
differential, with asymmetrical output, **2671**
for low-frequency bridge, **3150**
rejection factor of, **362**
with unselected components, **3011**
distributed, cascaded optimum valve utilization in, **361**
using secondary-emission valves, **1342**
with staggered anode and grid lines, **2670**
feedback, distortion in, analysis for, **1011**
generation of negative impedance by, **63**
RC, analysis based on impedance concept for, **2309**
selective, component tolerances in, **1339**, **3682**
transient response of, **2992**
stability of, effect of loading network on, **2669**
wide-band, using transistors, **1347**
Amplifiers, based on field-dependent resistance of porous conductors, **630**
with intermediate-point earthing, analysis for, **1338**
linear, 15-kW, with grounded-grid stage, **3559**
low-frequency, with transformer in feedback path, stability of, **1659**
magnetic, applications as control and switching devices, **363**
behaviour of saturable reactors in, analysis of, **3320**
bistable operation of, **1661**
d.c., push-pull, **365**
design of, practical method for, **1343**
differential, with flux reset control, analysis of, **2344**
using etched wiring, **64**
using Ge *p-n* junction photocell, **615**
high-frequency operation of, **2674**
with internal feedback, comparison of, **3012**
with low sensitivity threshold, **2673**
optimum core shape for, **340**
push-pull, with d.c. output, **3013**
design of, **2672**
rapid-response, for servomechanisms, **3014**
self-balancing, for servomechanism, **1660**
toroidal cores for, optimum i.d./o.d. ratio of, **996**
in 2-speed servomechanism, **1552**
microwave, using cavity resonator and molecular beam, **402**, **403**, **3710**
increase of *Q* factor by regeneration in, **348**
using disk-seal valves, circuits and measurements for, **1658**
based on electron spin resonance, **3032**
molecular-beam, theory of, **3709**
narrow-band, *Q*-multiplier, using transistors, **1013**
with optimum transient response, design of, **1340**
pentode, using transistor as anode load, **3008**
power, using junction transistors, **366**
using transistors, for servo operation, **3685**
for pulse-height analyser, **3311**
reflex, nonlinear distortion and stability of, **3314**
regenerative, use of distributed amplification in, **2002**
r.f., wide-band, linear, for ship's distribution system, **3317**
using tandem transistors, **3001**
using tetrode transistors, design of, **3684**
using transistors, analysis based on maximum power transfer, **369**
with common-base connection, equivalent circuit for, **(D)1012**
cut-off frequency of, use of neutralization for improvement of, **1345**
earthed-base, design of, **1344**
h.f., power gain and neutralization of, **3566**
of high-α composite type, **927**
input resistance and reactance of, measurement method for, **3474**
of junction type, design of, **367**, **2675**
pulse-regenerative, for digital computers, **1014**
with series and parallel feedback, design of, **703**
temperature stabilization of, **705**
using transistors in parallel, theoretical and experimental investigation of, **1662**
tuned, using transistors, simplified design procedure for, **368**
with triple-tuned coupling circuits, analysis for, **3318**
u.h.f., using disk-seal triodes, coupling networks for, **3007**
using double-ended lighthouse-type valve, **2589**
noise in, **62**
video, distribution, 'Chasseral' type, **916**
using transistors, for airborne radar equipment, **3322**
wide-band, high-frequency compensation of, **1010**
i.f., feedback, effect of component tolerances in, **2003**
u.h.f., using Type-416B planar triode, **700**
Analysers, pulse amplitude, design of, **3680**
pulse-height, input amplifier for, **3311**
semi-automatic, for pen-recorder chart, **3822**
spectrum, for very-low-frequency noise, **2855**
waveform, a.f., heterodyne type, **1163**
Antiferromagnetic materials, α-Fe_2O_3, domain walls in, **2815**
magnetostriction effects and domain walls in, **2816**
in Au-Mn system, **2450**
magnetic moment arrangements and magnetocrystalline deformations in, **1116**
Antiferromagnetism, influence of crystal electric field on transition point, **1370**
spin-wave theory of, criticism of, **726**
Atmosphere, (See also Ionosphere; Troposphere)
absorption of solar radiation, at 9·35 kMc/s, **2737**
at mm λ, by water vapour in, **3041**
absorption of 1·5-mm-λ radiation in, **1704**
closely spaced horizontal layers in, resolution of radar reflections from, **764**
composition of, calculation of molecular diffusive rate of change for heights up to 80 km, **745**
infrared radiation in, during solar eclipse, **1705**
lower, ionization balance in, effect of earth's α-ray emission on, **3370**
microwave refractive index of, measurements in U.S.A. of, at heights up to 125 m, **109**
survey of, **108**
oscillations in, thermal and gravitational excitation of, **1404**
ozone in, investigations during solar eclipses of, **2374**
ozone distribution, **748**, **3044**
determination from emission spectra, **3726**
investigation by infrared spectrographic technique, **3725**
observation of 'hole' over Alps in, **417**
ozonosphere, temperature distribution in, **110**
refractive index of, radiosonde MD 1 for measurements of, **3367**
Atmosphere, solar and lunar tides in, world distribution of, **2068**
upper, air-glow in, height of emission of λ 5577 line of, **2738**
photometric unit for, **3043**
charge transfer in, **3365**
conductivity of, diurnal variations at equatorial zone, **1719**
daytime brightness at altitudes up to 220 km, **427**
density of, and absorption of solar X rays, **3375**
density and temperature of, caged-bobbin method for determination of, **3836**
falling-sphere method for measurements on, **3723**
influence of negative oxygen ions on, **3053**
lifetime of ^1S state of oxygen atom during auroral displays, **1053**
measurements on, Pitot-tube method for, **3366**
night air-glow in, altitude of λ 5577 line in, **3368**
and sodium D-line layers in, **3369**
origin of Meinel hydroxyl system in, **3042**
nitrogen oxides and airglow in, **1405**
NO distribution in, **747**
ozone as indicator of air streams in, **2047**
radio-astronomy investigations of, **2368**
rocket measurements of pressure and density in, **2377**
sodium layer in, resonance scattering by, **3728**
temperatures and winds between 30 and 80 km, **2376**
winds in, theory for sound propagation in, **2046**, **2721**
Atmospheric electricity, over continents, **2389**
Atmospherics, a.f. disturbances in geomagnetic field due to, **3061**
a.f. frequency spectrum of, detailed investigation of, **3192**
amplitude probability distribution of, measurement of, **3135**
annual variations of, **2391**
effect of solar eruption on, **2715**, **2716**
effect on tuned circuits of, **1538**
interference caused by, in 3-Mc/s band, **1202**
in 5-Mc/s band at Poona, **905**
location of origin by remotely observed waveform, **122**
low-a.f. signals identified as, **2070**
measurements in southern and central Africa on, **2740**
'noise' whistler, analysis of, **2393**
propagation and waveforms of, **3189**
pulse trains in, theory of propagation by reflections, **2394**
v.l.f., propagation round earth, **231**
waveforms of, analyzer for, **1196**
effect of propagation in presence of geomagnetic field on, **3060**
at ranges up to 200 km, calculations of, **3385**

whistling, angle of arrival of, proposed method for determining, 430
observations of, at geomagnetically conjugate points, 1724
at Seattle and Stanford, 2392
propagation of, 3058
1–150-c/s, observations at Oregon of, 3062
5–30-kc/s, effect of solar eclipse on propagation of, 1400
100-kc/s, decrease during cosmic-radiation storm observed near auroral zone, 3059
Atomic energy, development in France of, 958, 1507
Atomic masses, of elements from Cr to Ge, 96
Attenuators, linear-frequency-response voltage divider type for high voltage, 694
microwave, of moulded iron-araldite powder mixtures, 1647
unidirectional, using ferrites and delay line, 3300
using waveguide with ferrite slabs, 1994, 3675
using waveguide containing water tube, 51
resistance type, for frequencies up to 10 Mc/s, 1003
using voltage dividers including Ge point-contact diodes, 50
Audio-frequency systems, measurements on, standard 56 I.R.E.3.S1 on, 2475
Audiometers, standardization of, 3612
Aurora, dispersed-proton theory of causation of, 3383
distribution in Alaska, 1722
E-region ionization and luminosity of, 119
E-region recombination during, 1413
and E_s-layer echoes, relation between, 2390
height distribution of emission lines of, 3739
height observations in Canada, 1723
lifetime of ^1S state of oxygen atom in upper atmosphere during, 1053
Lyman line emission from, secondary processes due to absorption of, 3384
photometric unit for, 3043
radar echoes from, and structure of, 2739
radar echoes and radio noise from, ionospheric effects on, 3519
radar investigation of, 428, 429
radiation at 3 200 Å from, measurement of, using G-M tube photon counter, 3740
vertical extent of arcs and bands, 1420
Automation. See Control systems; Electronic applications.

B

Batteries, (See also Power supplies)
accumulator, patents review of, 1873
using nuclear energy, types and applications of, 1871
Birefringence, in isotropic medium, due to intense beam of light, 2680
Bolometers, metal-resistance, sensitivity improvement at low temperature, 1499
solid-backed, theory for, 2857
Book notices and reviews, Active Networks, 65
Advances in Electronics and Electron Physics, Vol. VII, 3265
Die Anwendung der Photozellen, 2512
Approximations for Digital Computers, 675
Book notices and reviews, Atlas of Ground-Wave Propagation Curves for Frequencies between 30 Mc/s and 300 Mc/s, 3201
Basic Processes of Gaseous Electronics, 3353
Bessel Functions of Integer Order and Large Arguments, 199
Colour Television Engineering, 3557
Einführung in die piezoelektrische Messtechnik, 1519
Electronics and Television Convention: Proceedings, supplement to *Revista ucv*, 956
Elektronische Halbleiter, 504
Fundamental Formulas of Physics, 1392
Glossary of Terms relating to Automatic Digital Computers, B.S. 2641:1955, 1317
Guidance, 3183
Handbook Preferred Circuits, Navy Aeronautical Equipment, NAVAER 16-1-519, 3016
Handbuch der Physik, Band 33: Korpuskularoptik, 3852
High-Energy Accelerators, 1188
Index Mathematischer Tafelwerke und Tabellen aus allen Gebieten der Naturwissenschaften, 2470
An Introduction to Electronic Analogue Computers, 2976
Linear Feedback Analysis, 3017
Machine Translation of Languages: Fourteen Essays, 2867
Mathematische Methoden in der Hochfrequenztechnik, 2833
Mathieusche Funktionen und Sphäroidfunktionen, 511
Meteors, 2741
Notes on Applied Science No. 10, Noise Measurement Techniques, 1949
Optique electronique I: Lentilles electroniques, 3507
Poluprovodniki v Sovremennoi Fizike, 1149
Precision Electrical Measurements. Proceedings of a Symposium held at the National Physical Laboratory on 17–20 November 1951, 2497
Proceedings of the Eastern Joint Computer Conference, 1973
Proceedings of the Fourth Meeting of the Mixed Commission on the Ionosphere, 2395
Radio and Television Engineers' Reference Book, 1268
Reihenentwicklungen in der mathematischen Physik, 198
Scattering and Diffraction of Radio Waves, 3354
Schaltungstheorie und Messtechnik des Dezimeter- und Zentimeterwellengebietes, 1015
Semiconductors in Contemporary Physics, 1149
Servomechanism Analysis, 2544
Spectroscopy at Radio and Microwave Frequencies, 1393
Spheroidal Wave Functions, 3133
Sunspot and Geomagnetic-Storm Data derived from Greenwich Observations 1874–1954, 2071
Tables des Fonctions de Legendre Associées, calculées pour le Centre National d'Études des Télécommunications, 512
Théorie des Réseaux de Kirchhoff. Régime Sinusoïdal et Synthèse, 1348
Transistors and Other Crystal Valves, 2592
UKW-Fernempfangsbeobachtungen, ihre Bedeutung für Meteorologie und Funktechnik, 2878
Ultrasonic Engineering, 890
Breakdown, of gases in crossed electric fields, 2024
strength, in organic liquids, d.c. and a.c. measurements of, 2463
Bridges, a.c., high-voltage, capacitors in, method of detecting discharges in, 1805
transistor oscillators and detectors for, 529
for balance detection, using junction transistors, 1162
Campbell-type, with internal compensation of eddy current coupling, 205
h.v., 50-c/s null indicator for, 214
low-frequency, differential amplifier for, 3150
for measurement of differential resistance, 2854
Schering type, improved accuracy for loss-factor measurement, 2172
modified, for capacitance and loss-factor measurements, 2171
Broadcasting, f.m., multiplex, with f.m. subcarrier, 264
in Netherlands, development of network for, 3235
quality of reproduction in, 3881
v.h.f., in Spain, plans for, 2882
4-program subcarrier system for, 3215
over lines, factors causing distortion in, 266
network, v.h.f., British Forces in Germany, 1213
shared-channel operation, improvement effected by frequency offset in, 1869
stations, studios and control installations for, 1295
studios, acoustic design of, 969
Marseilles, acoustic treatment of, 3625
sound effects based on frequency conversion for, 2948
survey of services in U.S.S.R., 3219
in tropics, operational requirements for, 3536

C

Cables, coaxial, attenuation of, measurement at u.h.f. of, 2481
characteristic impedance of, choice of, 319
elliptic inductance of, 2281
h.f., standardization of, 15
measurement of coupling impedance of and study of screens for, 1950
pulse testing of, waveform distortion in, 3142
impedance deviations introduced by splices in, 1951
wide-band, design giving high uniformity in, 660
copper, joints in, resistance of, 973
video-pair, polythene-insulated, constructional and electrical characteristics of, 972
Capacitance, formulae for computing, 1318
Capacitance, standard of, form permitting calculation from one length determination, 2837
at Physikalisch-Technische Bundesanstalt, 1500
variable, with zero initial capacitance, 3499
Capacitors, air-dielectric, h.v., corona discharges in, 1805
ceramic-dielectric, temperature coefficient of, automatic measurement of, 3136
with chlorinated diphenyl dielectric impregnant, 1320
electrolytic, forming of negative electrode in, 1983
Ta-anode, solid-electrolyte, 2982
feed-through, stacked-disk, using interspersed ferrite washers, 2323
impedance of, frequency variation of, 33
metallized-paper, self-healing mechanism and production of, 3294
nonlinear, with $BaTiO_3$ dielectric, effect of simultaneous alternating and direct voltages on, 2649
ferroelectric-dielectric, 3663
with polychloronaphthalene-impregnated paper dielectric, 2980
solid-dielectric, leakage resistance of, 2321
u.h.f., use of reverse-biased junction diodes as, 2559
variable, with gas dielectric constituted by neon tube, 998
wound, shorted-edge, impedance of, 1982
Carbon, electrical and thermal conductivities of, variation with temperature of deposition of, 2422
Carrier-current systems, for cables, overhead lines and radio paths, standardization of, 2218
coaxial-cable, 960-channel, Italian, 262
Swiss, 908
Cathode-ray oscillographs, for analysing transients, 1165
and auxiliary equipment, review of developments since 1936, 1494
high-precision, 1495
for investigating gas-discharge characteristics, production of ionizing electron pulse for, 3492
multi-beam, e.m. scanning system for, 216
plasmograph, for studying electric discharges, 532
pulse-magnifying, 2173
techniques for improving measurement accuracy of, 3490
time-marker for, 3154
ultra-high-speed, 1824
giving vectorial display for voltages in frequency range 5–215 kc/s 1826
for very short h.v. phenomena, 2856
voltage-coincidence, giving multichannel operation with single-beam tube, 1164
with 43-cm screen, 861
Cathode-ray oscilloscopes, automatic beam-brightening device for, reduction of delay time in, 860, (D)3491
automatic brightness control circuit for, 1825
for displaying nine traces sequentially, 1823
Cathode-ray tubes, (See also under Television)
'deflection', theory of, 3591
with e.s. 'deflection' system and post acceleration, 2591
fluorescent screens in, striking potential of, 637
with hyperbolic field deflector, for multiplication, 2924
manufacture of, factory at Ulm for, 1927
plant for producing glass components, 638
manufacturers' tests on, 1919
potential of screen in, vibrating capacitor method for measuring, 204
with profiled target and ribbon beam, for frequency multiplication, 61
screens for, sedimentation process for, 636
sensitivity at v.h.f. of, Fourier transform method for determining, 949
signal-recorder, 2263
storage-type, for binary-digital information, 1262
definitions of terms on, standard 56 I.R.E. 7.S1, 2264
half-tone, for radar display, 2590
using mesh coplanar with target, 2923
secondary emission processes at insulated targets in, 2262, 2922
simulation of radar network by, 2077
Cathode sputtering, and electron emission, mechanism of, 385
Cathodes, (See also Electron emission)
directly heated by ionic bombardment, for 8-mm-λ c.w. magnetron, 1595
dispenser-type, comprising CaBa aluminate dispersed in W-Mo alloy, 1916
field-emission, noisiness of beam from, 3582
filament structures for transmitting valves, mutual heating between elements of, 2583
h.f. oscillations in space charge close to, 3581
high-emission, doubled, diffusion-type, 1258
L-type, difference between d.c. and pulsed emission from, 1915
oxide, BaO, effect of electron bombardment on, 3260
capillary, preparation and properties of, 3585
chemical potential and donor centres in, 3586
conduction mechanism in, 629, 2585
equivalent circuit for, 2586
conduction properties of, measurement of, 1487
diffusion of impurities through interface in, 1914
electrolytic transport phenomena in, 3583
excess Ba in, relation to emission of, 302
excess Ba and/or Sr in, measurement of, 301
hollow, characteristics of, 628
determination of electron temperature of, 1260
impregnated, effect of Ca/Sr or SrO additions in, 2918
impregnated-Ni-matrix, preparation and performance of, 626
indirectly heated, heater-cathode leakage effects in, 2260
interface impedance in, network representation and effects of, 2584
Cathodes, oxide, I/V characteristics at low activation energies, 2917
moulded, effect of Zr additions on, 946
of W and alkaline earth powder, performance of, 945
Ni-base, experimental investigation of, 3584
surface treatment for, 631
porous, anomalous variations of conduction in, 630
saturation emission of, theory of inflection-point method of measuring, 1259
SrO-coated Mo filament, deviations from Schottky line for, 1261
structure changes at high temperature, 625
ThO_2, significance of electrolysis for life of, 2587
triple, BaSrCa, X-ray study of, 627
review of developments in, 2582
roughness of, effect on beam density of, 3580
sharp-focusing, for X-ray tubes, 3847
space-charge standing-wave patterns associated with, influence on valve stability of, 1913
temperature of, initial-current method for measurement of, 2916
ThO_2 and Th films on Mo or Pt bases, experimental investigation of, 3259
tungsten, emission from lattice step on, temperature and field-emission technique for observing, 1912
Cells, (See also Batteries; Photocells; Power supplies)
electrochemical, fuel-type, recent research on, 2224
primary, Leclanché-type, using MnO_2, basic problems of, 2225, MnO_2 as depolarizer in, 1219, wafer construction for, 2888
containing MnO_2, depolarization of, 1872
secondary, Ni-Cd, for low-voltage stabilization, 1220
Circuits, (See also Networks)
for aeronautical equipment of U.S. Navy, standardization of, 342
amplitude limiter, neutralization of, 3676
analogue-to-digital converter, 1009
analysis of operation of, 'negative frequency' concept in, 683
counter, bidirectional, using dekatron, 2319
binary decade, giving complement of nine, 3312
for decoding p.c.m., using surface-barrier transistors, 1656
using dekatrons, 1337
using gated binary trigger cascade, 3310
quinary, composed of binary and ternary stages, 341
using secondary-emission valve, 3003
4-decade, for acoustic diffusion measurements, 3619
counting and batching, using gas-filled decade tubes, 1981
coupling, d.c., using voltage stabilizer valves, 692
current-waveform-generating, 695
feedback, use of signal flow graphs for analysis of, 2985
ferroresonant, analysis for, 2986
for switching and counting, 2647
gating, for selection of pulses for spectrum analysis, 3313
integrator, 'diode-pump', as frequency-sensitive relay, 1007
limiter, operation of, Fourier-series analysis of, 2879
printed, photo-etched, simple methods for producing, 1924
production and assembly of, 3902
silver migration by electrolysis in, prevention of, 3127
pulse distributor, using frame-grid heptode valves, 3262
scaling, high-resolution, 3309
using point-contact transistors, 3005
with 2-μs resolution, using junction transistors, 3006
sequential-switching, method for synthesizing, 28
standardization of, N.B.S. work on, 2324
switching, bistable flip-flop component tolerances for, 2648
using bistable magnetic amplifiers, 1661
based on magnetoresistive effect, 1319
multistable, using transistors, 37
using p-n-p-n Si transistors, 3899
for television video-signal change over, 2551
10-channel multiplex, using beam switching tube, 3662
transient response of, method of determination from frequency response, 337
using transistors, survey of, 1984
trigger, effect of noise on, 3681
trigger, pulse-height discriminator, using multielectrode valve as negative resistance, 1336
trigger and quantizing, for delta modulation and speech waveform investigation, 1540
voltage quantizer, 1008
Clocks, (See also Time)
quartz, at Physikalisch-Technische Bundesanstalt, frequency stability of, 3468
Coils, choking, impedance of, frequency variation of, 33
crossed, with common core, operation and applications of, 3293
ferroxcube-pot-cored, calculations for, 2646
focusing, oxide-coated Al foil, 2979
natural oscillations of coupled windings in, 1636
parallel-wound, theory and design examples, 3660
for producing uniform magnetic field, design of, 2695
self-capacitance of, methods for measurement of, 3475
use of ferrites in, survey of, 995
winding machines for, design of, 1978
Colorimeters, photoelectric, for television picture tubes, 1229
Colorimetry, C.I.E. trichromatic coefficients, automatic computation of, 70
Colour, trichromatic systems, differential chromaticity thresholds in, 583
Communication equipment, for dm-λ multichannel f.m. system, 1197
testing of, using ultrasonic fading simulator, 3191
Type-SFR329, for four-channel telephony, 1209
Communication systems, (See also Carrier-current systems; Radio links; Radiotelegraphy; Radiotelephony; Telegraphy; Telephony)
for aircraft, symposium on, 3885
in H.M. telegraph ships, modernization of, 2539
intelligibility of speech in, effect of amplitude limiting on, 3614
I.R.E. symposium in June 1954 on, 559
line and radio relay, review of development of, 1541
marine, symposium on, at Boston, Mass., 1954, 1726
military, I.R.E.–A.I.E.E. symposium in April 1954 on, 560
mobile, frequency-stability requirements for, 3882
number of subscribers per channel in, 1551
v.h.f., channel spacing in U.K. for, 3884
for works transport, 570
multicarrier, crosstalk in, 2219
multichannel, crosstalk in, spectral density of, 2883
f.m., nonlinear distortion and noise in, 3216
measurement of crosstalk in, 2167
p.c.m., asynchronous, 1204
multiplex, frequency-division, f.m., echo distortion in, 1867, (D)3214
microwave, minimization of intermodulation distortion in, 1547
regional, using p.p.m., 3878
time-division, 'quadriphase', 566
public address, using radio carrier, 2278
pulse, survey of, 562
survey of development of, 261
pulse-multiplex, for music transmission, 2534
transmission and reception problems in, 1546
radio-paging system using transistors, 3883
reduced-bandwidth speech systems, 2605
'vobanc', 2943
reliability of operation of, determined from probable lifetime of elements, 2217
using scatter propagation, symposium on, 3185
signal interference in, effect of selectivity curves on, 2222
s.s.b., low-power, for short or medium distances, 1545
suitability of ionospheric-scatter propagation for, 1860
survey of technical factors in, 565
topological study of, matrix method for, 3212
u.h.f., long-range, design of, 910
multichannel, using scatter propagation, 263
multiplex, based on extended-range signals, 265
u.s.w., multiplex, design based on tropospheric scatter propagation for, 567
v.h.f., frequency-multiplex, measurement of transmission characteristics of, 217
4-channel, Type-STR128, for Argentine, 1208
Communication theory, arithmetical identification of messages by index number, 2531
bandwidth and channel capacity required for ferment information of speech, 3613
binary signalling alphabets in, 1865
channel capacity formula, rigorous proof of, 259
information rate, new interpretation of, 3875
interference stability of systems with correcting codes, 3876
pre-correction of transmission errors, 907
sampling of band-limited functions, 1542
Communications, in India, research from 1945, 2215
symbols used in, draft German standard for, 2270
Components, (See also Electronic equipment and individual items)
for communication equipment, miniaturization and improvements effected in Japan, 2008
electronic, standardization of, 32
high-temperature, to meet Service demands, 3658
microwave, bibliography of advances in 1954, 1952
using microwave strip lines, symposium on, 1611
papers presented at 1954 Western Electronic Convention, 1633
reliability of, statistical techniques in, 1803
silver migration by electrolysis in, prevention of, 3127
temperature-dependent, a.c. admittance of, 676
testing of, at Laboratoire Central des Industries Électriques, 2840
Computers, analogue, bibliography including Russian literature on, 3284
correlator for a.f. noise measurements, 1968
c.r. tube with hyperbolic deflector field for multiplication, 2924
data for available types of, 2966
differential analyser, German installation, 2302
at G.M. Krzhizhanovski Institute, 3285
high-speed electronic, 24
technique for high-speed operation with, (D)2968
timing device and nonlinear units for, 2637
diode function simulators for, 2970
electromechanical, for investigations of synchrotron operation, 2973

Fourier synthesizer using magnetic-drum store, **987**
function generators for, linear-interpolation type, **2301**
general-purpose, for quantity production, **2299**
'integral analyser', function generator for, **1967**
for investigating shock spectrum of electronic equipment, **1969**
isograph, using magslip transmitters, **334**
for linear and nonlinear differential equations, in U.S.S.R., **2636**
with low-gain amplifiers, for aircraft flutter problems, **335**
modified-Wheatstone-bridge type, for solving tangents, **2969**
multipliers for, triangular-wave type, **3287**
a.m.-a.m. type, **2306**

Computers, analogue, multipliers for, high-accuracy, **1312**
survey of, **2967**
nonlinear *RC* networks for, **29**
photoelectric, for studying linear systems, **30**
principles and applications of, **2635**
simplified, multipurpose, **988**
simultaneous multiplier/divider for, **3655**
slow, d.c. amplifier for, **989**
stability criterion for, **671**
use with resistance-network analogues, **673**
usefulness of matrix methods in conjunction with, **672**
3-dimensional, Tridac, detailed description of, **2300**
analogue and digital, junction-transistor circuits for, **2304**
code disk for data conversion in, production of, **2975**
digital, for automatic electron-trajectory tracer, **3833**
binary adder with multiple-cell gas triode for, **3261**
circuits used in, **2638**
convention held in London, 1956, **2971**
C.S.I.R.O. Mark I, starting routines for, **669**
design and applications of, **1630**
design and programming of, **986**
EDSAC II, factors affecting reliability in design of, **3654**
e.s. pulse generator for, **1632**
fast multiplier using transistors, **1631**
IBM experimental model using transistors, **2305**
image-converter tubes as storage elements in, **3289**
improved iterative process for effecting division in, **25**
input/output devices for, **3653**
isograph root finder, **1315**
logic circuits using semiconductor diodes for, **2303**
logical design of, **2965**
magnetic-core circuits for, **1313**
Manchester MK1, simplification of coding for, **333**
multiple pulse stream generator for, **2972**
photoelectric numeral scanner for, **1316**
pilot ACE, optimum coding in, **670**
potentiometer-type unit used with teleprinter perforator for feeding instrument readings into, **1314**
program-controlled, PERM, **1311**
pulse-regenerative transistor amplifiers for, **1014**
rectangular-hysteresis-loop cores for, **497**
relay-operated accumulator for addition in, **2639**
SEAC and DYSEAC, combined operation of, **2633**
sequential switching circuits for, **28**
small, with magnetic-drum store, at Dresden, **2634**
storage elements for, gas-filled diodes as, **1972**
storage system using high-density magnetic-tape recording, **31**
superconductive element (cryotron) for, **1980**
symposium of papers in Elektronische Rundschau on, **1629**
transistor bistable circuits in, use of, **1970**
as translating dictionary, **26**
universal unit for small-quantity production, **336**
Williams-type storage system with increased packing density for, **3288**
digital decoder for, **2632**
electronic, definitions of terms on, Standard 56.I.R.E. 8.S1 on, **3657**
magnetic shift register with digital-to-analogue converter for, **3286**
mechanical binary-to-decimal converter, **1966**
Russian bibliography for 1950–1954, **680**
solution of differential equations using relaxation methods in conjunction with, **3821**
special-purpose, for machine control, **27**

Conduction, in lattice, effect of free electrons on, **2017**
in metals, cyclotron resonance under anomalous skin-effect conditions, **3334**
effect of electron collisions on skin effect, **711**
effect of magnetic field on, **3021**
electron-phonon-interaction theory of, **379**
electron-plasma theory of, **3689**
electron theory of, **3332**
mechanism responsible for electron energy dissipation in, **3020**
motion of electrons in magnetic field, **380**
and application to diamagnetism, **381**
in solids with spherically symmetric band structure, **3331**
in superconducting tin, effect of impurities on penetration depth at r.f. in, **3333**
in ThO_2 crystals, polarization effects in, **2119**

Conductivity, of anisotropic thin films, **3084**
anomalous skin effect, evaluation of surface impedance in, **3022**
of Cu, effect of lattice imperfections on, **790**
magnetic-field variation of, tensor analysis of, **2685**
of metals, dependence on surface charges of, **2421**
theory of, **1020**
table of integrals in, **3691**
of porous media, formulae for, **3761**
of Sb-Cs layer with applied potential, **2417**
of thin evaporated Ag films, effect of e.s. charge on, **3763**
of thin metal films, **2418**

Conferences and conventions, aircraft communications symposium, Utica, N.Y., Nov. 1955, **3885**
A.M.P.E.R.E., radio-frequency physics, Geneva, 1956, **3031**
communications by scatter propagation, Washington, Nov. 1955, **3185**
digital computer techniques, London, 1956, **2971**
electrical discharges in gases, Delft, 1955, **1674**
electroacoustics, Kiev, July 1955, **967, 2608**
electronic methods of pictorial reproduction, Jan. 1956, **2190**

Conferences and conventions, electronics and television, Milan, April 1954, **(B)956**
information theory, London, 1955, **260**
intermetallic semiconductors, Baldock, Herts, April 1955, **145**
ionospheric drifts, New Delhi, July 1955, **3045**
I.R.E.–A.I.E.E. symposium on military communications, New York, April 1954, **560**
I.R.E. discussion of organization of, **1600**
I.R.E. symposium on global communications, Washington, June 1954, **559**
I.R.E. 1955, Index to Convention Record, **1266**
I.R.E. 1956 National Convention, program and abstracts of papers for, **1923**
lighthouses and other aids to navigation, Scheveningen, 1955, **123**
low-temperature magnetism, Kharkov, July 1954, **822**
luminescence, Minsk, 1955, **2679**
marine communications and navigation, Boston, Mass., 1954, **1726**
microwave strip circuits, Oct. 1954, **1611**
physical acoustics and ultrasonics, Moscow, 1955, **305**
physics of ionosphere, presented at Cambridge, 1954, **755**
physics of semiconductor surfaces, Philadelphia, 1956, **3768**
piezoelectricity, Moscow, 1955, **2770**
semiconductors, Leningrad, Feb. 1955, **3767**
Ottawa, Feb. 1956, **2778**
U.S.S.R., April 1955, **459**
solar eclipses and ionosphere, London, Aug. 1955, **742**
sound and vibrations in solid bodies, Göttingen, April 1955, **2271**
speech communication research symposium, San Diego, Nov. 1955, **3608**
television, Leningrad, 1954, **277**
thin films, Algiers, April 1955, papers presented at, **3124**
U.R.S.I., 11th General Assembly, The Hague, 1954, **955**

Contacts, bridge and short-arc erosion, **2642**
comparison of various metals in service, **2310**
design and materials for, **3813**
resistance of, effect of aging, etc. on, **2461**
rubbed-on indium amalgam, low-resistance, **2124**

Control systems, (See also Electronic applications; Frequency control; Servomechanisms)
automatic, general survey of, **868**
response functions and vector loci of, **690**
for automatic factory operation, use of digital methods in, **1834**
feedback, symbols for, standard 55 I.R.E. 28.S1 on, **571**
terminology of, standard 55 I.R.E. 26.S2 on, **1173**
for heat exchangers, equivalent-circuit method for design of, **1503**
and instrumentation, for nuclear reactors, **3838**
for machine processes, use of computers in, **27**
for machine tools, **1172, 1502**
nonlinear, with random inputs, analysis of, **2498**
using optical diffraction gratings, for machine tools, **2499**

Converters, d.c./a.c., using transistor relaxation oscillator, **2884**
using Si-junction diodes for d.c. amplifiers, **1663**
d.c./d.c., using transistor relaxation oscillator, **573**

Cooling, importance of, in relation to design of electronic equipment, **3290**

Cores, (See also Coils)
ferrite, toroidal, with rectangular magnetization loops, behaviour in nonuniform fields of, **490**
ferromagnetic, rectangular-hysteresis-loop, for digital computers, **497**
toroidal, for magnetic amplifiers, optimum i.d./o.d. ratio of, **996**

Correlation coefficients, measurement of, use of oscilloscope scatter diagrams for, **3827**

Cosmic radiation, r.f., (See also Radio astronomy)
lower limiting frequency for transmission through ionosphere of, **3514**
and magnetohydrodynamic theory of plasma, **3346**
observations of, at frequencies near 1 Mc/s, **2369**

Cosmic rays, intensity variation near 1954 sunspot minimum, **2712**
use of observations for deriving geomagnetic dipole-field coordinates, **2371**
27-day recurrence tendency of, **1045**

Counters, (See also under Circuits)
G-M, influence of temperature on spurious counts in, **2511**
externally graphited, behaviour on exposure to radiation of, **885**
oxygen-quenched, **3505**
rare-gas/halogen, double pulses in, **2865**
proportional, Ar-filled, discharge mechanism in, **1845**
radiation, rate ratio meter for, **3850**
radiation, use of transistors in, **3175**
scintillation, large-area, **887**
optical aspects of, **1516**
portable, for geology applications, **888**
physics of **886**

Couplers, directional, bibliography on, addendum to, **2165**
incorporating filters, for multiplexing at 225–400 Mc/s, **353**
using magnetically controlled ferrite in rectangular waveguides, **667**

Crosstalk, (See also Interference)
in multichannel systems, measurement of, **2167**

Crystals, (See also Piezoelectric materials; Quartz; Resonators)
CdS, sublimation method of preparing, **2145**
defects in, effects on lattice vibrations of, **1042**
metal, with pure surfaces, vacuum congelation method for preparing, **1140**
polar, interaction of excitons with lattice vibrations in, **2705**
with structure modified by alloying or pressure, energy levels of, **839**

Crystals, surface states of, theory of, review including Russian work on, **372**
with zinc-blende structure, spin-orbit coupling effects in, **1139**
symmetry properties of energy bands of, **1138**
zone-melting purification process for, mathematical analysis of, **1141**

Current, alternating, exact measurement of, **1485**

D

Demodulators, a.m.-f.m., based on variation of slope of pulse edge, **551**
f.m. using recording system and p.f.m. converter, **3178**

Detection, of f.m., theory of, **2521**
of pulse signals in noise, **439**
comparison of correlation and integration techniques, **251**
in intensity-modulated visual display, **129**
of signals in noise, analysis for, **3202**
effect of contrast on visual detectability, **2400**
of sinusoidal signal, effect of random noise on, **904**
square-law, of background noise, analysis for, **3524**

Detectors, a.m., linear, influence of time constant in noise measurements, **1864**
autodyne, for paramagnetic resonance, theory of, **1664**
diode, effect of fluctuations in i.f. stage on, **2208**
f.m., using quadrature-grid pentode as locked oscillator, **1534**
ratio-type, simple explanation of operation, **252**
infrared-radiation, portable, using photocell and light chopper, **536**
microwave, using travelling-wave valve with periodic magnetic focusing system, **2259**
synchronous, advantages for asymmetric-sideband systems, **1566**
using transistor amplifiers, for a.c. bridges, **529**

Dielectric constant, of $BaTiO_3$, pressure variation of, **788**
of electroluminescent ZnS, **2411**
of imperfect nonpolar gas, **378**
of ionized gas, resonant-cavity measurements of, **80**
of liquids, measurement of, cell for, **1814**
at dm λ, using coaxial-line method, **1157**
pressure variation of, **2769**
measurement of, cavity-resonator method for, **2657**
cavity-wavemeter method for, **1815**
at dm λ, coaxial-line method for very small amounts of material, **2160**
'thin-sample' slotted-line method for, **2845**
at 1–50 Mc/s, line corrections in, **2477**
of powders, formula for, **3760**
of quartz, temperature and frequency variation of, **1474**
of solid loss-free bodies, measurements at dm λ and cm λ, **210**
of two-phase mixtures, empirical formula for, **787**
of water, measurement at low frequency of, **2159**

Dielectric properties, absorption in dilute liquid polar solutions, **1739**
of $BaTiO_3$/$SrTiO_3$ solid solutions, **3757**
of building materials, at cm λ, **1741**
of ceramic $BaTiO_3$, influence of method of preparation on, **1740**
formation of rectifying layers near electrodes, conditions for, **448**
of ice, at very low frequencies, **377**
losses, of ionic dielectrics in strong electric fields, **2767**
of quartz, at low temperatures and low frequencies, **451**
microwave, measurement of, Brewster-angle method for, **208**
by cavity-resonator method, **1156**
using coaxial-line method, **207**
of solid insulating materials, temperature dependence of, measurement of, **3139**
of niobates and tantalates of divalent metals, **3402**
of paper in piles, measurements at 9·35 kMc/s of, **3140**
of pinacol hydrate, experimental investigation of, **1475**
r.f., report of Geneva conference on radio-frequency physics, **3031**
of solid dielectrics, cm-λ measurements of, **1155**
of water-containing clays, dm-λ measurements of, **450**

Dielectrics, (See also Insulating materials)
artificial, using arrays of holes in high-strength plastics, **1437**
comprising arrays of particles, calculation of dielectric constant of, **1671**
calculation of permittivity and permeability of, **140**
formed of stacked perforated plates, **1628**
microwave transmission through, **1035, 1385**
films, electron-bombardment effects in, **1778**
formation of anode-interface layers on, **2125**
liquid, electric strength of, **2463**
mechanical force produced by electric field on, **3019**
nonlinear, introduction to theory of, **784**
secondary emission from, **3344**
theory of, survey of problems in, **3420**

Diffraction, of acoustic wave, by cylinder, **3269**
by cylinder, semiasymptotic series describing field in, **1377**
of e.m. waves, by aperture in plane screen, **2366**
by arbitrary aperture, integrals occurring in analysis of, **1379**
at cm λ, by conducting spheres in waveguide, **1381**
by rotationally symmetrical apertures, experimental study of, **2699**
by half-plane, **3704**
by long metal cylinders, parallel-plate technique for studying, **400**
by parallel-strip grating, **1380**
by perfectly conducting strip, **89**
by plane screen, for case of electric vector parallel to edge, **2700**
strict theory of, **399**
by spheres, **1689**

Diffraction, by half-plane, analysis for cylindrical pulse, **3703**
by plane aperture, four-dimensional theory of, **1669**
by plane directionally conducting screens, application of Babinet's principle to, **3705**
by slit, variational analysis for, **1378**
by wedge, asymptotic series in expressions for, **2348**

Direction finders, Adcock, polarization errors due to aerial bending in, **758**
rapidity of bearing fluctuations in, **3065**
8-element, spacing error of, **1423**
for aircraft, ferrite aerials for, **1622**
automatic, for recording rapid fluctuations of bearing, **2744**
long-base, 'Wullenwever', **3066**
wide-aperture, using ring array of fixed aerials, **330**

Direction finding, h.f. systems, design of, **1422**
plotting aid for, **2743**
on ships, difficulties due to presence of resonant structures in, **432**

Discharges, (See also Breakdown; Plasma)
in a.c. field, breakdown-voltage/frequency characteristic of, **3338**
arc, low-voltage ball-of-fire mode in, **1359**
breakdown in uniform field, experimental investigation of hydrogen, **387**
c.r.o. instrument (plasmograph) for study of, **532**
in diode with hot cathode, initiation of, **951**
electrodeless, disappearance of adsorbed gases from dielectric surfaces under, **1358**
electron avalanches in, statistical study of, **3337**
glow, determination of cathode fall of potential in, **2358**
field in, electron-beam-probe method of investigating, **390**
reduction of cathode fall by illumination of cathode, **389**
glow-to-arc transition in, field-emission mechanism for, **2356**
h.f., experimental investigation of, **2689, 3026**
influence of magnetic field on breakdown voltage of, **716**
low-pressure, starting conditions for, **2357**
induced, in rare gases, experimental and theoretical investigation of, **1675**
influence of light on mechanism of, **74**
intermediate frequency, experimental investigation of, **3025**
international symposium at Delft, 1955, **1674**
in liquid hydrocarbons, formative time lags in breakdown in, **2022**
low-pressure, ion oscillations at cathode potential minimum in, **2020**
oscillations in, survey of, **3692**
rotation of plasmoids in magnetic field in, **2021**
'microdischarges' in vacuum apparatus operated at high voltage, **1025**
microwave, electron affinity of hydrogen in, **1357**
in nonuniform field, experimental and theoretical investigation of, **3024**
between parallel plates, analysis for initial current growth in, **388**
pre-breakdown ionization currents in hydrogen, **1023**
u.h.f., in argon, breakdown field for, **3693**
in uniform field, electron avalanches in, statistics of, **3023**
V/I characteristics of, probe measurements of, and gas density in, **2686**

Discriminators, for f.m. receiver, pulse-counting circuit for, **1861**
frequency, linear, simple design for, **3325**
microwave, using distorted cylindrical resonator, **2007**
voltage, with pulse output, **1486**

Distortion, in broadcast transmissions over lines, due to phase delay and frequency-band limitation, **266**
due to echoes, in f.m. frequency-division multiplex systems, **1867, (D)3214**
in feedback amplifiers, **1011**
intermodulation, in microwave multiplex systems, minimization of, **1547**
nonlinear, of nonperiodic signal in electroacoustic system, **314**

E

Earth, conductivity of mantle of, **743**

Earth satellites, U.S.A. plans for I.G.Y. 1957–1958, **2718**

Electrets, mechanism of, experimental investigation of, **1797**

Electric fields, ionization of gases at metal surface by, **3329**
measurement of, method using reflector for, **2843**
paper-sheet analogue for investigating, **1819**
removal of thin films from metal surfaces by, **3330**

Electrical properties, of MnTe, **2812**

Electrical theory, and mechanics, analogies between, **67**

Electroacoustic equipment, (See also Loudspeakers; Microphones; Sound recording; Sound reproduction; Transducers)
application of Ti in, **3810**
nonlinear distortion of nonperiodic signal in, **314**

Electroacoustics, conference on, Kiev, July 1955, **967, 2608**

Electrodynamics, Ampère force, revised analysis for, **1371**
classical, as distribution theory, **2027**
fluid self-excited dynamo, **3348**
motion of two electric fluids, solutions of equations for, **1688**
nonlinear, theory of, comments on, **84**

Electroluminescence, (See also Phosphors)
in alternating field, reinforcement by rotation of crystals, **709**
brightness variations in alternating field, **137**
dependence of light amplification on light intensity in, **375**
in disordered ZnS, **1736**
experimental study using ZnS single crystals **1432**
in GaP, **1433**
influence of lifetime of excited centres on waveform of, **1068**
pulse-excitation investigation of, **374**
survey of knowledge on, **780**

Electroluminescence, in ZnS, mechanism of, **1071**
in ZnS-Mn films, in unidirectional field, temperature variation of, **1069**

Electrolysis, for etching and plating very small areas, **1148**

Electrolyte tank, for automatic tracing of electron trajectories, **3833**
general-purpose equipment, design of, **1820**
investigation of strip transmission lines by, **2283**

Electrolytes, impedance of, frequency dependence of, **3812**

Electromagnet, low-permanence, for general laboratory purposes, **3711**

Electromagnetic field, investigation of by means of multidimensional *LC* networks, **2491**
at junction of three media, analysis for, **88**
matrix description of, **85**
in stratified media excited by dipole, calculation of, **3036**

Electromagnetic theory, classical non-conservative, fundamental equations of, **2694**
e.m. momentum and electron inertia in current circuit, **2363**
generalized macroscopic equations, **2028**
magnetic moment of electron, **2683**
Maxwell's equations, asymptotic solutions involving fractional powers of frequency, **1667**
integration of, **3698**
of moving matter, **1032**
multipole expansions in radiation theory, **1372**
new classical model of electron, **2681**

Electrometers, vibrating-capacitor, low-zero-drift, **855**

Electron beams, current density in, effect of cathode roughness on, **3580**

deflected, knife-edge method for investigating aberrations of, 1677
flow of microwave power in, 300
of given shape, theoretical determination of field required to produce, 2907
interaction with r.f. fields of, quantum effects in, 393
irrotational, theory of, 1902
in long-beam valves, space-charge waves in, analysis for, 1583
in magnetic field, instability of, 2568
magnetically focused, using concave cathode, theory of, 618
positive-ion effects in, 623
plasma oscillations in, 289
propagation of growing waves in, conditions for, 1906
space-charge effects in, review of, 77
spherical aberration due to, 1363
space-charge waves in, 2912
with strong space charge, extended-range energy distribution in, 940
transverse current distribution in, X ray method for studying, 941
Electron emission, (See also Cathodes, Photoelectric emission)
from abraded metal surfaces, experimental investigation of, 1028
as after effect of glow discharge, experiments on, 391
from borides of rare earths, work function for, 167
and cathode sputtering, mechanism of, 385
field-dependent, thermionic, from tarnished surfaces, 75
from W, 392
field-type, at contacts between semiconductors, 1084, 3091
departures from Fowler-Nordheim law in, 1026
enhanced effect due to surface irregularities in, 1362
ionization and desorption effects associated with, 1360
at medium field strengths, from Ag, Al and Fe, 2360
from semiconductors, theory of, 717
theory of, 2690
from tungsten point, verification of theory of, 2359
from metal surfaces after mechanical working, 1027
from metals, effect of surface irregularity on, 2023
heated by high-density currents, 3690
influence of absorbed films on work function for, 3027
secondary, from Ag films, 1680
from alkali halide crystals, 3695
from Be films, 1679
from Cs_3Sb, 3787
dependence on angle of incidence of 1-3-MeV primaries, 3343
from dielectrics, 3344
energy distribution of, evidence of Auger process in, 3028
measurement of, 851
from metals bombarded by ions and neutral particles, 3341
from solids, theory of, 720
secondary and photoelectric, from Cs-Sb, effect of electron bombardment on, 1429
from superconductors, experimental investigation of, 3340
thermionic, from semiconductors, experimental investigation of, 1887
from W, velocity distribution of, 1367
thermionic and field-type, unified theory for, 3694
work function, factors affecting, 2351
of metals and semiconductors, 2352
of Pb, experimental determination of, 3112
Electron gas, in metal, magnetic properties of, 1021
Electron guns, for c.r. tubes, comparison of triode and tetrode types, 950
high-transconductance, use of mesh control grid in, 1597
low-voltage, anomalous emission effects in, 1177
for noncircular spots, design of, 3593
Pierce-type, analysis of beam formation with, 2581
design of, 1910, 1911
triode, for pencil beam, design of, 1257
Electron lenses, cylindrical, errors of, 1181
e.s., calculation of, matrix methods for, 3168
chromatic correction in, 1180
nonrotationally symmetrical, analysis for, 3848
magnetic, adjustable, 1842

Electron lenses, magnetic, aperture aberration in, 3172
aperture error of, 2862
lower limit of, 539
asymmetrical, field distribution in, 880
pinhole construction of, 881
cylindrical, armoured, 2508
focusing properties of, 1510
focusing curve representing various types of, 882
formulae and curves for, 2506
free from image rotation, 1598
calculation of induction in, 1513
short-focus, for very-high-velocity electrons, design of, 3169
for systems with curved axes, 1511
4-pole, for 50-MeV protons, 3849
numerical ray tracing in, 76
Electron microscopes, aperture aberration in, 5th order, 3171
chromatic aberration in, experimental investigation of, 883
console-Type-EM4, 540
e.s., intermediate-accelerator type, 1514
field-emission type, condition for seeing molecules with, 2505
high resolution associated with nonuniformities of emission tip in, 2504
field ion type, resolution of, 3329
'microdischarges' in, 1025
mirror-type, construction and performance of, 884
scanning type, advantages and applications of, 1179
stereograms from, depth determination and requirements for, 1183
Type-EM75kV, 1841
Electron microscopy, phase contrast and chromatic contrast in, 2507
using pulsed 'temperature-and-field' emission, 2863
reflection-system, use of cylindrical lens for distortion reduction in, 1182
stereoscopic reflection technique, 3170
Electron optics, analysis based on analogy with geometrical optics, 394
calculation of field distribution with specified imaging properties, 1361
of cylindrical systems with plane of symmetry, aberrations in, 2187
equations for wide beams taking account of chromatic aberration, 2509
e.s., fields permitting calculation of electron paths, 3167
fundamental equation of, exact solution of, 78
mirrors, observation of ferromagnetic domains by means of, 1794
properties of magnetic gaps, 1178
relation between arbitrary field and rotationally symmetrical field, 718
shadow technique, imaging atomic sources by, 2861
quantitative methods in, 1515
wave-mechanics theory of, 707
Electron telescope, limitation of star magnitudes attained by, 2188
Electron trajectories, in crossed electric and magnetic fields, method of tracing, 1821
rubber-membrane method, for determination of, 2851
for investigating diodes with limited emitting surfaces, 2852
Electronic applications, aerosoloscope particle counter using photomultiplier, 1836
automatic tracking of metal objects, 3158
balloon-borne, photoelectrically controlled sun-tracking system, 3844
camera-shutter tester using photoelectric integrator 889
ice detector for lighter-than-air craft, 870
machining metals by h.f. spark, 1847
measurement and control systems for continuous flow production plants, 2500
measurement of displacement by gas-discharge transducer, 3159
measurement of light-water concentration by nuclear resonance, 2502
measurement of mechanical displacement using capacitance probe, 228
measurement of projectile velocity by photocell circuit, 3160
measurement of rapid temperature fluctuations, 3258
measurement of temperature, humidity etc. using thermistors, 3501
measurement of thickness of nonferrous metals using skin effect, 1835
measurement of velocity of explosion wave fronts, microwave method for, 1833
measurement of very short time intervals using scanning image-converter tube, 3502
phase comparator for spring testing, 1505
photoelectric angular-error detectors for research rockets, 3162
photoelectric photography of spectra of faint stars, 3161
to picture reproduction by printing, 2190
prescribed-function vibration generator, 2501
presentation of optical diffraction patterns using television camera tube, 2180
radar motor-vehicle speed meters, accuracy of, 866
remote radio control of train, 3179
scanning apparatus for particle analysis, 3176
tachometer, high-sensitivity, 3841
'television' microscopy, 3837
thermistor hypodermic needle for subcutaneous temperature measurement, 3840
timing circuit for photography, 1175
translating dictionary, digital computers as, 26
Electronic equipment, airborne, military, reliability of, 2595
automatic production of, report on developments in, 2266
Sargrove E.C.M.E. machine for, 959
for small batches, 960
climatic considerations in design of, 3598
Electronic equipment, cooling arrangements for, 3290
dip-soldering method for use with printed circuits, 2928
embedment resins and technique for, 2829
papers presented at 1954 Western Electronic Convention, 1633
reliability of, 2596
prediction method based on failure data of U.S. Navy, 1926
systems approach to, 2268
use of redundant components for improvement of, 2267
shock spectrum of, analogue-computer arrangement for investigating, 1969
standardization of functional sub-assemblies for U.S. Navy, 1267
thermoelectric cooling for, 3224
Electrons, in alternating electric and constant magnetic fields, velocity distribution of, 79, 724
diffusion in gas at low temperature in electric field, 1673
energy losses on passage through thin foils of, 3342
inelastic reflection at Cu_2O surface of, 3029
inelastic scattering of, by Ni and Mo targets, 719
interaction, of beam electrons with electrons in thin films, 1678
in solids, dielectric theory of, 1017
and ions, collective description of interactions of, 384
liberation of, at metal surfaces and in gases, due to impact of low-energy ions, 386
in magnetic field, Cerenkov-type radiation from, 2364
in metals, motion in magnetic field, 380
and application to diamagnetism, 381
passage through metal foils of, energy losses in, 1364
penetration on bombardment of Al, 1676
scattered from solids, measurement of energy of, 849
secondary, measurement of energy of, 850
self-acceleration of, physical interpretation of, 2014
slow, energy losses in collisions in diatomic gases, 2688
specific charge on, 2015
tables of parameters relating to motion of, 2682
transmission through Al_2O_3 films, 1365
Electroscope, gold-leaf, high-sensitivity, 1161
Electrostatics, application of circle and sphere theorems to, 3688
charging in plastics, 2684
e.s. centre of conductor, 2350
e.s. field, of cylindrical trough with symmetrically placed plane conductor, 1018
new theorems on, 3328
rotation of dielectrics produced by, 71
Johnsen-Rahbek effect, theory and applications of, 1670
potential due to uniformly charged disk, 2016
Electrostriction, of $BaTiO_3$, 1075
in liquids, generation of ultrasonics by, 310
molecular theory of, 2353
Equalizers, using balanced amplifier, for telephone-line video-signal link, 275
derivative types, comparison with constant-resistance types, 354
Exhibitions, Leipzig Fair, radio and allied equipment shown at, 2593
of sound reproducing equipment, London, 1956, 2609
23rd National Radio, London, 1956, 3595
Experimental curves, method of smoothing, 2345, 2676
periodicity of, method of analysing, 2010

F

Facsimile, flat-bed transmitter for, 3545
standard 56 I.K.E. 9.S1 on terminology for, 2889
transmission of weather charts and other material, 2190
Faraday effect, on microwaves transmitted through Ge, 1098
in paraffin-ferrite mixtures, 493
in plasma, at 10 kMc/s, 732
in semiconductors, at infrared wavelengths, 1022
Ferrimagnetic materials. See Ferrites.
Ferrimagnetism, condition for resonance in, 2814
in Mn_3AlC, structure and properties of, 168
in Mn_4N, structure and properties of, 3799
theory of, application of Bethe-Weiss method to, 2026
Ferrites, anisotropy and magnetostriction of, and effect of heat treatment on, 831
Ba, Sr and Pb, effect of Bi_2O_3 on, 832
in cavity resonators, effect on frequency of, 2658
field distribution in, 347
in circular waveguides, energy-concentrating effects of, 1615
Co, effect of annealing in magnetic field on, neutron diffraction study of, 3452
magnetic resonance in, 172
Co and Co-Zn, response to heat treatment in magnetic field, 1788
Cu, and Cu chromite, influence of substitutions on quadratic deformation in, 1120
cubic and quadratic crystal forms, magnetic rotatory polarization in, 1792
micrographic study of cubic→quadratic transformation in, 1119
development and properties of, survey of, 830
Fe-Co, uniaxial anisotropy in, 1467
ferrimagnetic resonance of, calculation of field strength for, 185
frequency doubling effect, in crossed magnetic fields, 2138
and mixing in, 3301
Gd ferromagnetic resonance at 9 kMc/s, 183
magnetic properties of, 2821
high coercive force, obtained by substituting Al ions for Fe ions, 3451
in inductors, survey of, 995
infrared spectra of, 833

Ferrites, (La, Sr)FeO_3, crystal structure and properties of, 2822
Li, influence of temperature on structure of, 1118
micrographic study of, 3113
magnetic anisotropy of, constants of, 834
frequency dependence of, 835
magnetic resonance in u.h.f. circularly polarized field, 2455
magnetite and Co-substituted magnetite, magnetostriction and permeability of, 494
manufacture of, 192
measurement of microwave dielectric constant and tensor permeability of, cavity-resonator method for, 2846
Mg, complex susceptibility of, new method of plotting, 2137
Mg-Mn, effect of Fe deficiency on properties of, 1468
Fe-deficient, temperature dependent resistivity of, 3456
Mg-Mn-Al, with ferromagnetic resonance between 160 Mc/s and 1·9 kMc/s, 491
low magnetic saturation, properties of, 1136
microwave circuit components using nonreciprocal properties of, 3666
microwave propagation in, nonlinearity of, 1384
in microwave switches, 679
Mn, microwave ferromagnetic resonance in, 1134, 1791
Mn-Zn, initial permeability of, effect of alkali and alkaline-earth ions on, 3121
and grain size, 3122
permeability and magnetostriction of, 3458
reduction of eddy-current losses by adding Ca to, 3457
modulators using, sidebands produced by, 2005
Ni, conductivity and Seebeck-effect measurements on, 173
nickelites and cobaltites, preparation of, by fusion electrolysis, 3461
Ni-Co, crystal anisotropy and ferromagnetic-resonance-line widths of, 3119
Ni-Cu, preparation and properties of, 3809
Ni-Fe, ferromagnetic resonance in, 492
Ni-Zn, frequency dependence of properties of, 3120
sintered, initial permeabilities of, 2136
ordering and antiferromagnetism in, 3454
in paraffin-ferrite mixtures, Faraday effect in, 493
permeability variations in h.f. magnetic field, 1135
with permivar-type hysteresis loops, 489
preparation of specimens for examination of microstructure, 3453
rare-earth, crystal structure of, 2128
crystallographic study relating to, 2820
paramagnetic, temperature variation of susceptibility of, 1789
Sm, dilatometer thermal analysis of, 184
structure of, 1790
in rectangular waveguides, as magnetically controlled couplers, 667
as nonreciprocal attenuators, 3675
single-domain particles of, measurements on, 3455
susceptibility tensor components of, cavity-resonator determination of, 495
unidirectional attenuators using, 1994
wave propagation in, theory of, 2031
in waveguides, for effecting nonreciprocal phase shifts, 2959
propagation in, calculations for, 323
mathematical theory of, 1956
modes of, 325
theory of, 324
temperature dependence of properties of, 2291
theory of, 20
and devices based on, 2958
for 0·87 and 1·9 cm λ, 1957
yttrium, experimental investigation of magnetic properties of, 3114
Zn, antiferromagnetic transition in, 3800
Ferroelectric materials, (See also Piezoelectric materials)
alums, 3404
(Ba, Ca, Sr)TiO_3 systems, structural characteristics of, 2084
$BaTiO_3$, ceramics, anomalous polarization in, 3400
effect of firing cycle on, 1434
effect of mechanical strain on, 2086
electromechanical properties of, 2083
influence of grain size on hysteresis in, 3758
metallographic study of, 2413
effect of partial replacement of Ti by Ge and Si, 1737
electrostriction in, theory of, 1742
etched crystals, replica technique for examination of, 2414
first-order transition in, optical observation of, 452
ion interactions and domain structure of, 139
method of investigation of pyroelectric effect using pulsed illumination, 1745
low-temperature properties of, 454
observations on etched crystals of, 1074
polarization phenomena associated with field strengths of 1 kV/cm in, 2766
polarization reversal in hysteresis loop of, 3759
polycrystalline, domain processes in, 2765
single crystals, investigation of hysteresis in, 1438
neutron analysis of, 1072
surface space-charge layers in, effects of, 3406
temperature variation of absorption of, 453
twinning in, 2085
$BaTiO_3$-SiO_2 system, phase equilibria in, 1435
$BaTiO_3$-$SrTiO_3$ solid solutions, preparation and properties of, 3757
$BaTiO_3$ and TiO_2, crystal structure of, 2773
$Cd_2Nb_2O_7$, specific heat anomaly at Curie temperature, 449
electrostriction in, survey of, 2088
guanidine aluminium sulphate hexahydrate, 3403
experimental study of, 2415

Ferroelectric materials, guanidine vanadium sulphate hexahydrate, 2772
$KNbO_3$, experimental investigation of, 2412
Moscow conference on piezoelectricity, 2770
niobates of Na and Cd, experimental investigation of structure and properties of, 2087
structure and phase transitions of, 3401
niobates and tantalates of divalent metals, 3402
as nonlinear coupling medium for modulator, 3671
$PbTiO_3$, X ray and neutron diffraction study of, 2771
X ray study of, 786
phosphates and arsenates, anomalous variations of dielectric constant at low temperature in, 1738
with pseudo-cubic structure, thermodynamic treatment of, 1744
Rochelle salt, Barkhausen pulses in, 2774
effect of exposure to radioactive irradiation on, 143
electrical after-effects in, 1743
stannate solid solutions, experimental investigation of, 3405
survey and theory of, 785
Ferromagnetic materials, (See also Ferrites; Magnetic properties)
α-Fe_2O_3, microwave resonance in, 486, 2132
alloys, alnico, domain structure of, 176
high coercivity, demonstration of domains in, 3805
alnico 5, effect of precipitation-particle shape on coercive force of, 825
anisotropy constant of, 481
anisotropy induced by magnetic annealing in, 177
armco iron, Hall effect in, 2819
velocity of ultrasonic waves in, 1131
in Au-Mn system, 2450
Bi-Mn and Si-Fe, domain patterns on, interpretation of, 3116
Co-Ni cubic solid solutions, domain structure of, 3802
Cu-Co, influence of magnetic field during precipitation, 1782
Cu-Ni, temperature dependence of Hall coefficient in, 3801
dependence of characteristics on lamination thickness in, 1133
Fe-Al, for magnetostrictive transducers, 3118
Fe-Ni, powder compacts, effects of sintering process on, 178
wire under tension, magnetization-reversal centres in, 179
Hall effect in, theory of, 3117
h.f.-resistance method for metallurgical investigation of, 1504
high-coercivity, thermal effects associated with magnetization of, 1130
MnBi, investigation of transitions in, 171
Ni-Fe, ΔE and δE effects in, 1785
films, domain structure in, 1132
loss of feature at thickness <1 mil, 483
mechanical damping in, 1783
permalloys, Hall effect in, 487
permanent-magnet, alcomex, 2135
production of square hysteresis loop by pressure, 828
Si-Fe, domain formation on reverse magnetization in, 1464
domain nucleation in, 2452
magnetization curves and domain structure of, 3450
single crystals, magnetic hardness for different crystallographic directions in, 2129
structure of, powder-pattern investigation of, 824
Si steel, domain configuration and crystallographic orientation in, 169
anisotropy induced by annealing in, 1459
Barkhausen effect in, 1685
Co, smallest size of domains in, 484
Co particles coated with CoO, exchange anisotropy in, 3803
coercive force in, theory of, 1124
associated with development of tubular domains in ('Schlauchzieher') 485
cyanides of 3d transition-group elements, 3804
domain boundary displacements in, network analogy analysis for, 1127
domains in, depiction by secondary-emission microscope and other methods, 1793
dry-powder method for demonstrating, 1121
theory and demonstrations of, 1780
use of electron mirrors for observation of, 1794

'double-exchange' interaction in, calculations of, **1117**
effect of compression on, **3115**
elongated Fe particles, for permanent magnets, **826**
elongated single-domain particles, effect of shape on coercive force of, **1460**
theoretical explanation of, **1461**
erbium, low-temperature measurements on, **1787**
Fe, dispersion due to domain-wall movements in, **3448**
effect of nitride additions on coercive force of, **482**
energy-band structure of, **174**
permeability near ferromagnetic resonance of, theory and measurement of, **2134**
thermodynamic functions of, **3807**
Fe and Fe alloys, influence of free carbon on properties of, **1463**
galvanomagnetic effects in, **2133**
γ-Fe_2O_3, magnetic saturation and structure of, **2451**
Hall effect and spontaneous magnetization of, **1784**
hysteresis coefficient and permeability of, relation between, **3123**
hysteresis loop of, review of research on, **498**
magnetite, specific heat of, **3806**
single crystals, magnetization at temperatures near Curie point, **3449**
magnetite and sesquioxide of α-iron, demagnetization by alternating fields, **2130**
magnetization curves of, representation by simple mathematical functions of, **3459**
Ferromagnetic materials, irreversible after-effect in, **1123**
laminations, effect of compression on, **182**
magnetic moment of, theory of, **1779**
magnetic viscosity in, influence of specimen dimensions on, **728**
magnetostatic theory for, **84**
magnetothermal effect in, reversible and irreversible components of, **823**
measurement method for small samples, **3143**
metals, Nernst effect in, theory of, **94**
relaxation and gyromagnetic properties of, **2817**
Ni, effect of demagnetization method on magnetization of, **2131**
magnetostriction constants of, calculation of, **1137**
single crystals, low-temperature resonance absorption study of, **2818**
residual magnetization and magnetostriction of, **1786**
wire, position of poles in, influence of stresses and texture on, **1466**
Ni and Ni alloys, microwave resonance investigations of, **829**
Ni and Ni-Cu alloys, magnetic anisotropy energy of, **2453**
NiO, colloidal, magnetic susceptibility measurements on, **3798**
permanent-magnet, coercive force and irreversible after-effect in, **2823**
perovskite-type compounds containing Mn, neutron diffraction study, of, **1114**
theory of semicovalent exchange applied to, **1115**
photoelectric emission from, **1059**
powders, effect of particle interaction on coercive force, **827**
Fe, for permanent magnets, preparation of, **1478**
Fe-oxide, dependence of coercive force on particle size and shape, **170**
of hæmatite (α-Fe_2O_3), remanent magnetization of, **1129**
comprising particles of different sizes, coercive force of, **1128**
resonance characteristics of, **496**
reversible permeability of, application to frequency modulators, **1469**
review of recent research on, **2456**
spontaneous Hall effect in, **1465**
tapes, with square hysteresis loops, domain formation on flux reversal in, **1125, 1126**
thin films, evaporation technique for, **181**
thin layers, energy of Bloch walls in, **180**
for waveguides, attenuation and permeability of, **2289**
Ferromagnetism, anisotropy in cubic crystals, temperature dependence of, **1686**
in CoTi, experimental investigation of, **488**
interpretation of results of, **3808**
dipolar, at 0°K, **397**
hysteresis losses in rotating magnetic field, **499**
in NiO, induced by addition of Li ions, **2454**
of noble metals with Mn, **175**
and para- and ferri-magnetism, theory of, **3797**
quantum theory of, **727**
research at Ferrara University, **2362**
spin-deviation theory of, **1368, 2025**
theory of, based on fluctuating field model, **1462**
thermodynamic, **3696**
in transition metals, theory of, **1369**
Field strength, (See also Reception; Wave propagation, e.m.)
measurement of, at microwave frequencies, by spinning-rod perturbation method, **519**
waveguide probe for, **2170**
recording instrument for, **2853**
measuring set comprising double-heterodyne receiver for, **2525**
plotting, using rubber membrane and resistance paper models, **1492**
v.h.f./u.h.f. receiver for recording, **3528**
Films, thin, adsorbed, removal of, by electric field, **3330**
Ag, evaporated, effect of e.s. charge on conductivity of, **3763**
Al_2O_3, transmission of electrons through, **1365**
Au, conductivity and optical transmission of, **836**
Cu_2O, observed by electron diffraction after cathode sputtering, **3125**
surface structure and contact potential difference of, **3106**
Cu-Be alloy, evaporated, relation between thickness and structure of, **2458**
dielectric, electron-bombardment effects in, **1778**
ferromagnetic evaporation technique for, **181**
international colloquium April 1955 on, papers presented at, **3124**
metal, anisotropic, conductivity of, **3084**
electrical constants of, **2418**
Ni-Fe, domain structure in, **1132**
PbS, effect of oxygen on photoconduction in, **3751**
resistivity of, **3762**
TiN and TiC, semiconductor properties of, **2447**
Filters, (See also Networks)
active, *RC*, design of, **2662**
with *RC* feedback loop, design data for **1329**
a.f., with electronically controlled cut-off characteristics, **352**
band-pass, a.f., high *Q*, using negative-feedback amplifier, **49**
using crystals in stagger-tuned circuits, for range 400 kc/s–5 Mc/s, **693**
design technique based on insertion-loss method and frequency transformation, **3299**
with low asymmetry, design of, **1992**
multiplexing, directional-coupler type for 225–400 Mc/s, **353**
band-stop, using crystals, parallel-circuit design for, **3674**
by-pass, 3-terminal pair, **3673**
diplexing, for u.h.f. communication systems, **2332**
Filters, directional, combining, waveguide, transmission-line and lumped-constant constructions for, **3297**
electromechanical, 100 kc/s torsional type, **1002**
high-pass, lattice, crystal, **48**
holder, theory based on Foster's reactance theorem for, **1328**
l.f., high-pass, *RC*, associated with feedback amplifiers, **2663**
low-pass, approximate analysis based on potential-analogue method, **1001**
design chart for, **1646**
for eliminating transmitter harmonics in television band I, **47**
ladder, design data for, **3296**
for metre waves, **3298**
RC, synthesis of, **2993**
using stacked disk feed-through capacitors, **2323**
microwave, using circular waveguide with radial-line cavities, **1330**
polarization, using artificial crystals, **1299**
waveguide, design of, **1645**
using dielectric $\lambda/4$ transformers, **1991**
with periodic structure, theory based on characteristic reflection and transmission factors for, **46**
power-law and Tchebycheff types, of order up to $n=5$, catalogue of, **351**
RC, with single-component frequency control, **2561**
for recovering periodically sampled data, design of, **1331**
rejector, bifilar-T, for television receiver, **1993, (D)2664**
v.h.f., transmission-line, calculation of 1 stubs for, **1332**
Fluctuations, (See also Noise)
amplitude and phase, in oscillators, **1996**
electrical, effect on oscillators of, **55**
of klystron oscillation frequency, **1997**
quantum theory of, **1350**
radio problems involving, statistical treatment of, **1925**
Fluxmeters. See Meters.
Frequency, allocations, for Europe, suggested new plan for, **909**
control, automatic, using cut-off junction diode, **3207**
of radio equipment, stabilisyne, **2644**
conversion, as basis for studio sound effects, **2948**
use of positive nonlinear resistors for, **2978**
converters, using *n-p*-junction diodes, **3897**
dividers, (See also Circuits, counter)
large-ratio, using secondary emission valve, **3003**
using saturable reactors, **359**
for time-signal generator, using decade counter tubes, **1657**
doubling and mixing in ferrites, **3301**
measurement of, for bevatron, **2453**
using high-speed counter with transfer oscillator and frequency converter, **524**
meter, cavity-resonator type, high-precision, **219**
heterodyne-type, for 10 kc/s–1 Mc/s, **1497**
for lower a.f. range, based on a hyperbolic waveform, **1828**
microwave, wide-band, based on paramagnetic resonance, **1496**
phase-bridge type, **2176**
recording-type, 'frequency microscope', **3493**
switched-capacitor type using transistor switch, **3494**
multiplier, based on c.r. tube with pinhole target, **61**
klystron, design and performance of, **2915**
using two-beam klystron, **1255**
stabilization, by waveguides operated near cut-off, **2619**
stabilizer, for reflex klystron, **58**
standards, microwave, using double-modulated klystron, **1806**
proposed unit independent of second for, **1481**
and time standards, fundamental requirements for, **3823**

G

Galvanomagnetic effects, in Bi, **2141**
effect of admixtures on, **1472**
in ferromagnetic conductors, **2133**
in metals in strong fields, **3038**
Galvanometers, screened, very high-sensitivity, **1160**
string-type, direct-recording, extended-frequency-range, **3831**
Gases, ionized, (See also Plasma)
hydromagnetic wave motion in, **91**
in magnetic field, use of Boltzmann equation for studying, **2692**
molecular, determination of first Townsend coefficient for, **395**
permittivity of, resonant-cavity measurements of, **80**
2-component, collision processes and oscillations in, **3345**
rare, impurities in, analysis technique using microwave excitation, **3349**
Generators, (See also Oscillators; Signal generators; Ultrasonics)
e.s., charged belt, for particle accelerators, **1838**
Van de Graaff, with liquid charge carrier, **915**
pulse, using mercury selector switch, **3291**
using saturable reactors, for radar modulators, **36**
for time marking, **864**
Geomagnetic storms, correlation with solar phenomena and cosmic-ray storms, **1708**
sky-brightness changes associated with, **744**
statistical analysis of sudden commencements at Huancayo, **415**
with sudden commencements, distribution of preliminary reverse impulse of, **106**
Geomagnetism, activity, index of, correlation with F_2-layer critical frequencies of, **3380**
periodic variations of, correlation with sunspot variations, **2720**
variations of, at Kerguelen and Heard Island, **103**
and solar M regions, **3364**
27-day recurrence tendency in, and cosmic-ray intensity variations, **1045**
Geomagnetism, dynamo theory of, **1401, 3348**
earth's crust as seat of, **2719**
far-field geomagnetic equator, cosmic-ray criteria for determining, **3721**
field coordinates, derivation from cosmic-ray observations, **2371**
field disturbances, at a.f., and conductivity of ionosphere, **1718**
origin of, **3061**
correlation with variations of F_2 layer critical frequencies, **117**
and F_2 layer disturbances, **1720**
relation to solar coronal activity of, **2042**
and solar prominences, **1399**
field pulsations, elimination of slow variations in recording of, **1402**
field variations, diurnal, variations in strength of dynamo wind system for, **2373**
in range 1–150 c/s, observations at Oregon of, **3062**
during solar eclipse, **107, 416, 1716, 3722**
measurements in Japan of, **2045**
due to solar flares, **423, (D)3376**
fluctuations in, diurnal and seasonal variations of, **1403**
isomagnetic charts, adjustment of, **2372**
measurement by nuclear-induction method, **414**
S_q field in polar region, **2044**
Geophysical prospecting, using e.m. waves, **3839**
use of ultrasonics in, theory of, **1501**
for water, using e.m. interference principle, **1171, (D)3157**
Geophysics, e.m. induction in two-layer earth, **413**
gravitational influence of Jupiter, **3040**
investigations by means of earth satellites during I.G.Y. 1957–1958, **2718**
Glass. See Insulating materials, glass.
Ground, electrical constants of, influence of temperature and humidity on, **102**

H

Hall effect, in alloys, **2457**
in armco iron, **2819**
application to microwave power measurement, **1488**
in Bi, dependence on pressure of, **500**
in ferromagnetic materials, spontaneous component of, **1465**
in ionic semiconductors, theory of, **1757**
in metals, frequency variation of, **1039**
in permalloys, **487**
in porous media, formulae for, **3761**
review of theory and applications, **95**
in semiconductors, measurement of temperature variation of, **3155**
in Zn, anisotropy of, and change of resistance in magnetic field, **3408**
Headphones, earmuffs for, design and testing of, **1297**
Hearing, detection of signals in, comparison between human and electronic systems for, **3609**
effect of listener's training on intelligibility, **1290**
intelligibility of competing messages, **1288**
effect of relative level variation on, **3606**
improvements effected by delay technique, **1287**
intelligibility problems in speech communication, symposium on, **3608**
location of sound sources, experiments on, **649**
masking threshold in, effect of duration of masking stimulus on, **3610**
masking of tones by bands of noise, **3611**
parameters affecting pitch of amplitude-modulated tones, **7**
selective response to one of two simultaneous differentially filtered messages, **650**
sensitivity to changes in interruption rate of white noise, **1943**
thresholds of, and thermal noise, **2604**
Hearing aids, Japanese, using transistors, **3204**
Heating, h.f., dielectric, investigation of field in, **3843**
generators for, using Brown Boveri transmitting and rectifying valves, **1174**
Horns, hyperbolic function, impedance-transformations for, uses of Smith chart for, **658**
natural frequencies in, **1608**
Hysteresis, domain-model representation of, new general approach to, **1351**
amplification of calculations by substitution of ellipse for loop, **2346**

I

Image converters, as digital computer storage elements, **3289**
electron-acoustic, using $BaTiO_3$ screen, **2184**
electron-optical study of, large-area electron sources for, **3173**
resolving power of, **1918**
scanning type, for measurement of very short time intervals, **3502**
Image intensifiers, solid-state, using photoconductive and electroluminescent layers, **932, 933, 1897**
switching applications of, **931**
photoelectric fluorescent, realizable light gain in, **871**
for X-ray cinematrontgenography, **3174**
for X rays, **2510**
Impedance, (See also Transmission lines)
acoustic, measurement method based on difference of sound pressures, **1942**
Smith chart for determination of, **1286**
tube method for measurement of, theory of, **2941**
acoustic and electrical, measuring system for, **3149**
calculation for parallel-connected impedances, **991**
fundamental properties of, analysis based on '*p* world' for, **2309**
measurement of, using long transmission line, **1158**
Impedance, measurement of, microwave, correction for line losses in, **206**
mismatching of, influence on power transfer of, **1985**
negative, feedback-amplifier arrangement for realizing, **63**
nonlinear, parallel-connected, equivalent single impedance for, **1974**
of waveguide components, measurement method using automatic plotter for, **1822**
Inductance, formulae for computing, **1318**
mutual, standard of, for Canada, **1830**, primary-winding effects in, **1831**
standards of, stability of, effect of humidity on, **2472**
r.f. calibration of, N.P.L. practice for, **3134**
Inductors. See Coils.
Information theory, (See also Communication theory)
London conference in 1955 on, **260**
terminology and notation in, **2530**
Instruments, calibration of, power supply for, **1554**
Insulating materials, (See also Dielectric properties; Ferroelectric materials)
$BaTiO_3$ with antimonate additions, **3815**
$BaTiO_3$-SiO_2 system, phase equilibria in, **1435**
ceramics, $BaTiO_3$-$PbZrO_3$ solid solutions, X ray investigation of, **1436**
boron nitride, physical properties of, **2462**
survey of, **501**
in system MgO-CaO-SnO_2-TiO_2, experimental investigation of, **191**
titania-niobia and zirconia-niobia, phase equilibrium relations in, **844**
vitreous ternary lead silicates, resistivity of, **2827**
chemical interaction between impurities in, **3409**
crystals, with electron-bombardment-induced conductivity, effect of metal electrodes used, **843**
effects of particle irradiation on, **3814**
field-dependent conductivity and breakdown in, **72**
glass, determination of resistance of, **521**
dielectric losses and polarizability of colour centres in, **2768**
low-melting point, for 'soldering' ordinary glasses, **3462**
paramagnetic resonance absorption in, **502**
resistivity of, **3129**
and silica components, effect of u.v. and X-ray irradiation on, **3460**
hexane, experimental investigation of conduction and breakdown in, **846**
mica, noise at pre-breakdown current in, **845**
X ray studies of some Indian species of, **3816**
paper, acetylized, review of properties of, **1144**
dielectric properties of, measurement at 9·35 kMc/s of, **3140**
plastics, electron-irradiated polyethylene, production and properties of, **2464**
e.s. charges in, **2684**
mechanical properties of, **1145**
survey of, **2828**
polychloronaphthalene, as impregnant for capacitor paper dielectric, **2980**
polymeric, noise in, experimental investigation of, **3817**
polythene, irradiated, electric strength of, **1146**
polyvinyl acetate, experimental investigation of, **1477**
silicones, properties and applications of, **1476**
solid, breakdown in divergent fields, **189**
microwave dielectric properties of, temperature dependence of, measurement of, **3139**
synthetic, formation of creep paths in, **142**
resins, for embedding electronic equipment, **2829**
vitreous silicates, structure revealed by X rays in, **190**
Interference, adjacent-channel, in f.m. reception, analysis for, **3203**
in radiotelegraphy, influence of signal waveform on, **2522**
due to atmospherics, diurnal and seasonal variations of level of, **3868**
in 3-Mc/s band, **1202**
in 5-Mc/s band at Poona, **905**
due to corona on h.v. lines, equipment for measurement of, **3488**
elimination by parallel-connected receiver, **3206**
from f.m. receivers, measurements of, **3826**
in high-frequency diffusion on overhead lines, by long-wave transmissions, **3877**
impulsive, in narrow-band f.m. receivers, filter requirements for minimizing, **2523**
protection ratios as function of transmitter-frequency separation, **1363**
radio, measurement methods and limits in Germany and other countries, **2528**
in radio reception, in aircraft, suppression methods for, **1539**
from fluorescent lighting systems, **3209**
in radio and television, survey of with reference to work of British Post Office, **3867**
from radio and television receivers, I.R.E. standard on methods of measurement of, **3831**
r.f., from 380 kV installations, **2212**
screen-room method for measurements on, **3471**
suppression of, British Standards Code of Practice on, **906**
from television receivers, measurements in Italy on, **2237**
in television reception, on band III, from band I signals, **2894**
causes and cures for, **2899**
from television timebase circuits, transistor set for measuring, **1537**
from unwanted signals, effect of system selectivity curves on, **2222**
Interferometers, acoustic, fixed-path, for 600–800 kc/s, **1285**
microwave, for measurements of target speed and distance, **533**
for visual astronomy, based on principles of radio interferometer, **1666**
International Geophysical Year, symposium on U.S. earth-satellite program for, **2718**
Ionization, and dissociation, of complex molecules by electron impact, **2019**
by relativistic particles, survey of, **2018**
Ionized media, atomic nitrogen, ultraviolet absorption of, **2013**
dynamics of, theory of, **2361**
fluids, compressible, oscillations of, **721**
hydromagnetic flow of, analysis for, **723**
hydromagnetic stability in, **722**

positive column, travelling density waves in, 714
turbulent, scattering of e.m. waves in, 1373
Ionosphere, (See also Atmosphere, Wave propagation, e.m.)
absorption in, measurements at Dakar on, 3513
measurements at Royal Netherlands Meteorological Institute (R.N.M.I.) of, 3054
of medium and short waves, relative contribution of D and E layers to, 2048
observations of, during disturbed periods, 1411
at equatorial stations, 3855
studies on, perturbing influence of focusing effects in, 1417
variations of, measured at different stations, 1051
of 150-kc/s waves, lunar semidiurnal oscillation in, 116
during annular solar eclipse 25th Dec. 1954 at Grahamstown, 2061
characteristics recorded at Rome, March 1949–April 1953, 3047
conductivity of, and geomagnetic disturbances at a.f., 1718
convective instability in, influence of magnetic field on, 3371
D layer, effect of Lyman line emission from aurora on, 3384
observations during solar eclipse 30th June 1954 on, 2062
D and E layers, formation mechanism of, 1407
model deduced from absorption considerations, 2194
disturbances in, and geomagnetic activity, 103
drifts in, measurements in Japan of, 3730
spaced-receiver measurements on, 3200
symposium at New Delhi, July 1955 on, 3045
E region, auroral ionization, and luminosity, 119
coupling region of, fading of echoes from, 2520
critical frequency, night-time measurements of, 1408
distortion due to electrical currents in, 752
effect of solar eclipse on, 1716
electron-density distribution in, influence of S_q current system on, 2049
electron production and recombination during solar eclipse, 753
ion composition of, night-time rocket measurements of, 1409
irregularities in, movements of, 2051
recombination coefficient of, determination from solar-eclipse data of, 3378
recombination during auroras in, 1413
winds in, 418
E and F_1 layers, anomalous variations in, 2053
investigation of solar sources controlling, 412
E_2 layer, observations of, at Ahmedabad, 3373
at Calcutta, 112
E_s layer, echoes, relation to aurora of, 2390
frequency characteristics of, 2730
lunar tidal variations in, 1717
movement of patches in, determination of velocity of, 1710
observations at Ahmedabad of, 3048
'sequential' type, analysis of observations of, 2052
survey of irregular and regular variations in, 2379
variations during solar eclipses, 115
winds in, 118
echo-sounding technique for, oblique-incidence variable-frequency, 1414
effect of solar eclipse, 25th Feb. 1952, 3377
30th June 1954, observations at Rome of, 3732
effect of solar flares on, 423, (D) 3376
electron-density distribution in, calculations taking account of earth's curvature for, 3727
calculation from propagation data over a frequency range, 3382
electron-density profiles, method for obtaining from F^1f records, 2381
electron distribution in, 2722
simplified method of determining, 2378
F region, ambipolar diffusion in, 3729
collision frequency in, determinations at Calcutta, 1711, 2056
disturbances and viscosity in, 1410
electron content and parameters of, over Ahmedabad, 2055
electron density in, variations during ionospheric storms, 2057
electron production and loss in, 2724
formation of and splitting in, 2725
position of spread-F equator, 3374
recombination, and attachment in during solar eclipse, 3733
and ion production in, 113
spread echoes from, correlation with radio-star scintillations of, 2731
observations in Japan on, 1713
theories of formation of, 750
travelling disturbances in, electron-resonance interpretation of, 3372
variations of height of maximum ionization in, 420
F_1 layer, geomagnetic control of, 421
temperature-height model based on C.R.P.I. f_0 records, 2054
F_2 layer, correlation between critical frequency and sunspot number, 2059
critical-frequency variations, correlation with geomagnetic disturbances, 117, 3380
correlation with sunspot cycle and latitude, 3052
Ionosphere, F_2 layer, distortion at magnetic equator, 424
disturbances in, and geomagnetic disturbances, 1720
associated with magnetic storms, 426
diurnal variations in, at magnetic equator, 2064
electron-density variations in, correlation with night air-glow of, 1714
height distribution of electrons on magnetically quiet days in, 2726
influence of diffusion on ionization distribution in, 751, 1712, 2727
longitude effect and geomagnetic control in, 3051
lunar-solar variations observed at Ibadan, 3731
mechanism of electron removal in, 114
structure deduced from diurnal variations in, 3050
theory of formation of, 3049
variations of height of maximum electron density in, 419
wave disturbances and hydromagnetic effects in, 111
geomagnetic distortion in, 425
height measurements of, high-accuracy, using recording sounder, 3046
ionization density of, estimated from observations of 'nose' whistlers, 2393
irregularities in, determination of height of, 1415
effect of anisotropic amplitude patterns on determination of, 120
movements of, 2519
observation of radio-star scintillations for investigation of, 2058
shape of, 121
layer formation in, influence of S_q current system on, 1049
lower, night-time model deduced from coupling phenomena at 150 kc/s, 1050
lunar variations in, 2733
meteoric E layer, observations of, 2871
molecular concentration in, wave-interaction method for determination of, 2197
movements in, analysis of, diffraction-pattern technique for, 2050
Royal Astronomical Society discussion on, 1709
due to solar heating, 1048
observations at North Pole made from aircraft, 2382
photoionization of, theory for nonisothermal atmosphere, 749
physics of, conference on, text of papers presented at, 755
polarization of echoes from, 2384
review for 1955, 1419
Russian terms relating to, selected list of, 1715
and scintillations of radio stars at 50 Mc/s, 422
self-interaction of waves in, precautions for experimental study of, 2198
during solar eclipse, 26th June 1955, observations in India of, 2732
25th Feb. 1952, interpretation of observations of, 1412, 3378
30th June 1954, observations in Norway of, 3379
and solar eclipses, symposium on, 742
sounding equipment, using delayed-coincidence method, 754
giving direct record of m.u.f., 2729
structure of, investigation by oblique-incidence pulse transmissions, 1850
temperature in, and cooling after sunset, 1406
distribution of, 2380
tilts in, observations in New Zealand on, 2723
during solar eclipse 30th June 1954 at Slough, 2060
Tortosa sounding station, inauguration of, 3735
transient echoes from, effect of rate of occurrence of meteors on, 2713
travelling ripples in, selective fading due to, 3863
turbulence in, influence of geomagnetic field on, 2063
winds in, effect of positive solar particles on, 2734
space-receiver fading observations of, 2728
spaced-receiver methods of investigating, 1418
velocity determinations from fading records, 2387, 2388
Z propagation hole in, 2195
Ions, detection of, using Si rectifier, 2181
and electrons, collective description of interactions of, 384
negative, H and O, photodetachment cross-section of, 396
in nonuniform field, mobility and space charge of, 3335
penetration on bombardment of Al, 1676

L

Lamps, arc, xenon, suitability for television studios of, 2238
cathodoluminescent, with high-conductivity phosphor screens, 3756
r.f.-excited, 1837
Length, and time, units of, definition of, 2834
Lenses, (See also Aerials; Electron lenses)
acoustic, directional properties of, 315
microwave, dielectric, design data for, 2964
matching sections for, 2293
numerical design of, 2298
slotted-dielectric matching section for, 3652
of stacked perforated plates, 1628
Light, correlation of photons in coherent beams of, 1666
interference between independent sources, 710
scattering by inhomogeneous solid, theory of, 1353
velocity of, determination of, band-spectrum method for, 1352
by infrared-spectroscopy method, 69
Lightning, flash counters, design of type responding to e.s. field component only, 2069
Loudspeakers, (See also Public-address systems; Sound)
cone-type, miniature, reduced-depth construction for, 2277
corona-wind, with ring control electrode, 659
directivity factor of, measurement of, 2950
Loudspeakers, e.s. semicylindrical with thin polyester diaphragm, 316
2-diaphragm, 3627
for 8–16 kc/s, 1298
for producing sound pulses for acoustic measurements, 3267
spherical systems, polar and frequency characteristics of, 1948
twin-cone, for frequencies up to 18 kc/s, 12
use of acoustic lenses in, 315
Luminescence, (See also Electroluminescence; Phosphors)
cathodoluminescence, review of recent research on, 779
decay of, measurement of light quanta in, 1804
of Si p-n junction at breakdown voltage, 1088
symposium on, Minsk, 1955, 2679
Lunar radiation, r.f., at 1·5 mm λ, observations of, 1704

M

Magnetic field, calculation method based on scalar magnetic potential inside currents, 1682
of circular conductor, analysis using elliptic integrals for, 1033
effect on current in conducting fluid, 722
effect on motion of conducting sphere in conducting fluid, 3352
effect on resistance of Fe-Ni alloys, 1777
of ferromagnetic materials, use of Hall generator for measurements on, 3481
galvanic effects of, origin of modes of description of, 383
intense, pulsed, production and applications of, 3030
measurement of, differential-capacitance probe for, 1817
using overdamped galvanometer as partial fluxmeter, 2487
search coil giving fourth-order terms for, 2486
survey of methods for, 2167, 2485
of parallel magnetic conductors, and associated mechanical forces, 3347
scalar potential of line current in, curvilinear integral expression for, 1683
of thin cylindrical coil, theory of, 3699
uniform, design of coils for, 2695
in vicinity of solar system, effect on particle trajectories of, 737
Magnetic properties, of colloidal NiO, 3798
of microscopic particles, torsion balance for measurement of, 2155
of Mn_3AlC, 168
of Mn_4N, 3799
of MnTe, 2812
of NiTe, 2813
of sesquioxides of transition elements, 3447
structure of α and β Mn, 2127
Magnetic resonance. See Resonance.
Magnetism, at low temperatures, conference at Khar'kov, 1954, 822
paramagnetic relaxation, theory of, 1031
theory of magnetic masses, 81
Magnetization, balance for measurements at temperatures down to 1·4°K, 3144
curves, survey of methods of obtaining, 212
of cylinder, by means of coil, theory taking account of magnetic after-effects, 3697
Magnetohydrodynamics, application to analysis of cosmic magnetic fields of, 3355
Royal Society discussion on, text of papers at, 1687
Magnetometer, airborne, N.O.L. Type 2A, 104
astatic, for measurements on ferromagnetic sheet, 213
electronic, c.r. tube with a.c. beam balancing, 852
recording, for geomagnetic variations at one place, 105
vibrating-coil, for measurements on small samples, 3483
Magnetoresistance, of Zn, anisotropy in magnetic field of, 3408
Magnetostatics, theory of, application of transformation of line integral into surface integral, 82
for ferromagnetic materials, 83
Magnetostriction, in alloys, experimental investigation of, 2825
association with superconductivity of, 1041
and magnetomechanical effects, survey of, 2142
of Ni single crystals, theory of, 2143
quantum theory of, 1040
use of Wiedemann effect in electromechanical quadripole, 350
Magnets, (See also Ferromagnetic materials)
bar, distance between poles of, calculation of, 1684
iron-powder compacts, investigation of properties of, 1781
permanent, aging of, apparatus for investigating, 1816
for microwave valves, 1254
Mathematics, analysis of non-Markovian stochastic processes, 196
asymptotic expansions of solutions of wave equation $(\nabla^2 + k^2)u = 0$, 398
calculation, of roots of equations, 2148
of time functions for broken rational transform functions, 1151
Cauchy's problem for type-hole equations, and differentiability of solution of elliptic equations, 1801
complex correlation coefficient, simple interpretation of, 2832
confluent hypergeometric functions, 507
cube equations, method of solving, 194
differential equations, linear, second-order, asymptotic solution in domain containing one transition point, 3131
of field theory, classification of, 3820
nonlinear, for synchronization of oscillations, 3464
almost periodic solutions of, 1480
use of relaxation methods in conjunction with computers for solving, 3821
error function of complex argument, transformation method for, 2467
formulae for inverse oscillatory interpolation, 2154
Fourier series corresponding to analytical function, convergence and summation of, 195
Mathematics, Fredholm integral equations, methods for solving, 1802
harmonic analysis and synthesis, simplified procedure for, 3463
integral equations, Tranter's problem on, new solution of, 3465
integration of nonlinear integral equation for Laplace function, 2468
inverse Laplace transforms expressed as Neumann series, 3819
Laguerre polynomials, short table of, 2465
Laplace transformation, elementary explanation of, 1798
matrix representation of complex vectors, 847
method of stationary phase, 2466
methods of obtaining least-squares bars, 2469
Mikusiński's operational calculus, 1800
orthogonal polynomials with orthogonal derivatives, 2150
partial difference equations for potential distribution, 1019
periodic solutions of Duffing's equation with damping, 2153
probability distribution of constant vector plus Rayleigh-distributed vector, 197
reduction of hypergeometric functions in noise theory to tabulated functions, 509
simultaneous equations, solution by matrix iteration, 1799
solution of linear second-order differential equations, method of comparison equation (generalized W.K.B. method) for, 2831
solution of quartic equations, 506
solutions of equations involving power-series expansions, 505
stationary random functions in frequency-change problems, 3467
statistical techniques in reliability studies, 1803
tables of $\int_0^x J_0(t)dt$ for large x, 2152
Tchebycheff polynomials, 2830
transformations of Fourier and Laplace types, 2149
vectors, matrices and tensors, introduction to, 1150
wave equation, round-off errors in implicit finite-difference methods for, 3466
Measurements, (See also individual subjects)
apparatus for transmission characteristics of v.h.f. frequency-multiplex systems, 217
correcting for running means by successive substitutions, 706
correction for instrumental bandwidth in, 66
of linearity, c.r.o. method for, 3478
on magnetic particles, torsion balance for, 2155
microwave, technique of, review of, 3470
of power, power factor, voltage or current, use of push-pull cathode-follower circuit for, 2488
of wavelength, interferometer method for, mm-λ region, 1827
Metals, (See also Conduction; Ferromagnetic materials; Magnetic properties)
Bi, cyclotron resonance and energy-band structure in, 2140
microwave cyclotron absorption in, 1471
conduction electrons in, magnetic properties of, 1021
conduction and photoemission of, effect of adsorbed gas on, 1672
conductivity of, dependence on surface charges of, 2421
influence of relaxation fluctuations on, 2090
theory of, 1020
Cu, conductivity of, effect of lattice imperfections on, 790
thermoelectric power of, effect of lattice imperfections on, 1112
effects of particle and γ radiation on, 2034
Ga, electrical anisotropy near fusion point, 837
sub-group-B metal compounds with, 187
Hall effect in, frequency variation of, 1039
In, alloys of, review of resource on, 188
interdiffusion of, optical investigation of, 1391
irradiation effects in, survey of, 457
microwave resonance in, 186
resistance of, at high current densities, 456
surface impedance of, at infrared frequencies, 1076
Th, high-purity, preparation of, 2144
Ti, applications in electroacoustic equipment in Japan, 3810
tin, resistance at 7·3 × 10^{10} c/s in superconducting state, 1776
transport properties of, kinetic theory derivation of, 2420
Zn, thin films of, crystal structure of, 2459
zone melting technique using electron bombardment, 2147
Meteors, distribution of magnitudes and masses of, radio-echo determinations, of, 2037
ionization trails of, wave propagation via, 3509
rate of occurrence of, time of diurnal maxima of, 2713
shower, detected by forward scattering of radio waves, variations in numbers of, 738, 1046
radar survey of southern hemisphere, 739
showers associated with Giacobini comet, radar observations of, 410
trail echoes, diffusion effects in, 3717
duration of, correlation with visual magnitudes of, 2039
duration and height of, 2040
ionospheric effects on, 3519
polarization effects in, 2038
radar observation of, influence of noise on, 99
trail ionization, conditions and origins of, 409
use for Janet communication system, 3533
trails, diffusion coefficients in, 100
light radiation from, mechanism of production of, 3362
reflection of v.h.f. waves from, 2516
velocities of, radio methods for determining, 3716
Meters, ammeter, zero-resistance, self-balancing, for corrosion-cell measurements, 2168
flutter, f.m.-receiver type, 13
fluxmeter, nuclear-resonance type, 3480
photoelectric, detailed description and analysis of, 2163
Meters, megohmmeter, valve-type, logarithmic, 3152
multipurpose, using modified cathode follower, 220
ohmmeters, survey with special attention to very high and very low resistances, 3151
permeameter, r.f. improved design of, 3482
recording types, servo-operated, review of, 3830
shockproof, construction and testing of, 853
voltmeter, hot-wire bridge, independent of frequency from 50 c/s to 2 kc/s, 857
with logarithmic amplifier, for range 1 mV—10 V and 50 c/s—100 kc/s, 856
oscillating electrode, theory of, 2489
r.f., stable, comprising waveguide attenuator and thermocouple element, 2850
with square-law characteristic approximated by linear-segment characteristic, 528
valve, slide-back type, 3486
survey of types of, 3832
with unity-gain amplifiers, 3485
voltmeters and test sets, review of, 1818
wattmeters, microwave, resonant cavity, torque-operated, 2495
review of commercial types, 1168
v.h.f., wideband, for measurement of transmitter power, 534
for 20 c/s–20 kc/s, 3496
Microphones, (See also Transducers)
calibration of, thermophone method of, 657
with cardioid pattern, with 3 rear ports, 970
condenser-type, using plastics membrane, 2949
with D diaphragm, heat treatment for stabilizing, 2276
piezoelectric, unidirectional experimental investigation of, 3275
probe-type, methods of testing, 1296
ribbon-type, design of, 971
pressure-gradient, B.B.C. Type PGS, development of, 1607
Missiles, guided, fuel cut-off control for, 1186
principles of, short survey of, 1185
tracking of, multipath phase errors in c.w. systems for, 2748
3-dimensional proportional navigation system for, 3177
Modulation, amplitude, vector method of analysing, 2529
frequency, detection of, theory of, 2521
multiple-pulse-time system, 2214
output product for 2-frequency input, tables of Bennett functions for, 2213
phase, high-deviation method based on nonlinear a.m., 287
pulse, calculation of spectra in, 1203
delta, quantizing circuits for, 1540
pulse-code, damped-oscillation method for producing, 3210
reduction of noise effects and increase of channel capacity in, 258
transistor counter for decoding in, 1656

pulse position, symmetrical-pulse multiplex system for short radio links using, **3878**
pulse-slope, a.f. characteristics of, **561**
noise characteristics of, **1205**
simultaneous a.m. and ph.m. in quadrature, **257**
Modulators, amplitude, using 'anode self-modulation', **2900**
using ferrite gyrator with feedback, **3015**
using pentode suppressor grid, analysis of operation of, **3237**
with valve in amplifier screen-grid circuit, **597**
using class-B amplifiers without grid current, **1571**
ferrite, sidebands produced by, **2005**
frequency, for multiplex broadcast transmitters, **3558**
magnetic, based on reversible permeability variation, **1469**
wide-band, using asymmetrical 3-phase *RC* oscillator, **1650**
for wide-band radio relay systems, **286**
based on nonlinear coupling via ferroelectric block, **3671**
reactance-valve, effects due to nonlinearity in, **53**
Monitoring, automatic recording instrument for, **2175**
of sound broadcast programs, B.B.C. technique for, **2221**
of standard-frequency transmissions, at N.P.L., **(D)516**
Musical instruments, electronic, comprehensive survey of, **2183**
electronic organ, acoustic design of, **1283**

N

Navigation aids, (See also Radar)
aerial, for Bristol Britannia, **2073**
comparison of Decca and TACAN, **434**
self-contained, using two-axis gyro device, **2072**
and air traffic control at Zürich airport, **1424**
development by Siemens in Germany from 1930–1945, **1054**
light-weight radio compass, **2396**
Navaglobe-Navarho, comparison with other systems, **761**
TACAN system, for bearing and distance, **125**
symposium on, **3386**
telegen, using existing television transmissions, **762**
U.S.A., survey of, **433**
aerial and marine, consol, night effect in, **759**
consol ('Sonne'), accuracy of, **760**
effect of atmospherics on, measurements in southern and central Africa on, **2740**
marine, microwave harbour beacon, **124**
shore-based cm-λ radar as, **1055**
Networks, (See also Circuits; Filters)
active, graph method for study of, **52**
with delay variation, effect on pulse response of, **2984**
dipole, reactive energy in, **39**
formulae for equivalence of, **3664**
group-delay measurements on, error sources in, **3477**
Networks, iterated, matrix theory of, **1326**
ladder, with Butterworth or Tchebycheff response, synthesis of, **42**
theory based on Kirchhoff's laws for, **43**
linear, tensor analysis for, **(D)682**
linearity of, c.r.o. method for measurement of, **3478**
multidimensional, *LC*, determination of e.m. fields by means of, **2491**
multiple, derivation of characteristic curves for, **3302**
without mutual inductance, theory of, **41**
node and mesh determinants for, **44**
nonlinear, general analysis for, **2988**
general mathematical theory of, **2326**
quadripole, active, with intermediate-point earthing, analysis for, **1338**
cascaded, matrix method for solution of, **1642**
composite, reactance, geometrical representation of, **1988**
electromechanical, using magnetostrictive core, **350**
geometrical representation of double transformer by, **1989**
geometrical representation of parallel and series reactance as, **1643**
graphical determination of parameters of, **349**
group-delay measurements on, **2482**
linear, optimum characteristics for minimum distortion of pulses in, **1327**
loss-free, linear, geometrical representation of, **2331**
synthesized from nonuniform lines, **2990**
noise factor of, **691**
noisy, theory of, **2665**
transformation rules for noise parameters of, **688**
with nonideal transfer characteristics, bandwidth of, **2660**
nonlinear, effect on noise spectrum of, **1644**
operating-parameter cascade matrix of, **1990**
phase shift produced by, measurement of, **3479**
including valves or transistors, matrix analysis for, **2994**
for wide-band matching of aerial impedance, **2991**
RC, nonlinear, for analogue system, **29**
parallel-T, design method based on equivalent circuit for, **2659**
response of, simple z-transform method for approximate determination of, **999**
response functions and vector loci of, **690**
selective, initial transients with a.m. and f.m., **45**
synthesis procedure for realizing given impedance, **1987**
theory of, existence theorem for driving-point impedance functions, **3665**
impedance and admittance determinants in, **2325**
inter-reciprocity concept in, **2983**
based on linearly independent subgraphs, **343**
phase of semi-infinite unit attenuation slope, tables of, **2989**
variation and compensation theorems in, **1321**
transient response of, comparison of methods of calculating, **689**
theory of, **3670**
transient and steady-state response of, analysis of correlation between, **2328**
2-terminal, comprising diode in series with linear impedance, analysis for, **687**
impedance and admittance of, 3-dimensional locus diagrams for, **2641**
with only 2 types of impedance element, theorem on, **38**
operational impedance of, theory of, **3295**
theory of, **684**
2-*n* terminal, impedance transformation of, analysis for, **1995**
3-terminal, null-type, simple analysis for, **3672**
Noise, (See also Atmospherics; Cosmic radiation; Fluctuations; Solar radiation; Sound)
acoustic, correlation properties of, analysis for, **1934**
in aerials, due to external heated bodies, **3638**
a.f., measurement of correlation coefficient of, **1968**
background, square-law detection of, analysis for, **3524**
in CdS single crystals at high field strength, **3792**
contact, in composition resistors, **34**
cross-modulation, in multichannel communication systems, spectral density of, **2883**
current, a.f., in PbS, **1109**
in Ge, frequency spectrum of, **1454**
in Ge filaments, spectrum of, **2445**
in Ge *p-n* diodes, frequency spectrum of, **2558**
in semiconductors, relative influence of majority and minority carriers on, **1111**
theory of, **480**
theory of 1/*f* spectral distribution of, **817**
in diode detector, due to voltage fluctuations in i.f. stage, **2208**
effect of contrast on visual detection of signals in, **2400**
effect on trigger circuits, **3681**
in electron beams from field-emission cathodes, **3582**
factor, meter for, automatic, **1498**
of quadripoles, **691**
flicker, in Ge diodes, spectral distribution of, **1576**
in photocells, **3569**
relation of cathode space-charge standing-wave patterns to, **1913**
in secondary-emission valves and photomultipliers, **3587**
f.m., in oscillators, **1649**
in focused-beam valves, due to positive ions and secondary electrons, **1256**
in Ge diodes, effect of illumination on, **290**
generators, cm-λ, using gas-discharge tubes and two-conductor lines, **3147**
gas-discharge, effective-noise temperature of, calculation of, **3146**
Noise, generators, gas-discharge tube as, theory of, **3484**
standard-temperature, S-band, calibration of, **3829**
influence on oscillators of, **1648**
in insulating materials, at pre-breakdown current, **845**
in junction transistors, measurements at 7–50 kc/s of, **606**
measurement of, errors due to line reflections in, **2473**
with linear scale, for microwave systems, **527**
use of thermoelectric standard noise sources for, **1484**
at 3 cm λ using hot source, **3825**
in microwave long-beam valves, due to electron interception, **1594**
in negative-feedback a.f. amplifiers, **3009**
in nonlinear devices, analysis for, **509**
in photoconductive cells, reduction of, **1248**
in photomultipliers, hysteresis effect in, **929**
in *p-n-p* transistors, **1246**
in polymeric insulating materials, experimental investigation of, **3817**
radiation, measurement of, comparison of modulation and 2-receiver methods for, **535**
in reception, simple method for determining level of, **3828**
statistical theory of, **557**
response of systems to, methods for investigating, **2527**
r.f., measurement of, **3137**
influence of detector time constant in, **1864**
in semiconductor junctions, **1894**
in semiconductors, distribution function of, **818**
Hall-effect investigation of, **1101**
shot, in junction diodes and transistors, **600**
in *p-n* junctions, frequency variation of, **2123**
in valves, theory of, **1581**, use of correlation tensor in, **1582**
in Si filaments, effect of illumination on, **1089**
in Si microwave diodes, **(D)601**
in Si *p-n*-junction photovoltaic cells, **1899**, **1900**
in space-charge-limited diodes, **947**
specific, of PbS photocells, **2249**
spectrum modifications on passage through nonlinear quadripole, **1644**
statistical analysis of, use of Gram-Charlier series in, **2677**
survey of theory of, **2308**
in television, visibility of, **1234**
thermal, null-indicating radiometers for, **222**
sensitivity of radiometers for, **221**
in travelling wave valves, **622**, **3579**
for 3·2 cm λ, measurements on, **3578**
in u.h.f. amplifiers, **62**
in valves and transistors, **616**
visual detection of pulse signals in, **129**
v.l.f. spectrum analysis using speeded-up optical record, **2855**
Nomograms, three-dimensional, practical techniques for, **510**

O

Oscillations, of compressible ionized fluids, eigenfrequencies, of, **721**
containing harmonics, synchronization of, theory of, **2333**
damped, logarithmic decrement of, time variation of, **708**
h.f., crystal diode for generating, **1888**
in low-pressure discharges, survey of, **3692**
at mm λ, generated by magnetic undulator, **1034**
nonsinusoidal, nonlinear distortion due to system response, **2012**
plasma, in electron beams, **289**
in external field, **3018**
in hot-cathode valves, **633**
relaxation, in triode-valve circuit with high grid resistance, **1652**
subharmonic, in nonlinear systems, experimental investigation of, **2977**
with positive damping, **1374**
at submm λ, generated by bunched electron beam in waveguide, **1036**
synchronization of, nonlinear differential equation for, **3464**
theory of, interrelation between Rayleigh's and van der Pol's equations, **3132**
in thermistors and Ge point-contact rectifiers, **696**
in time-variable linear systems, general analysis for, **2651**
Oscillators, (See also Circuits; Signal generators)
a.f., stable, using point-contact transistor, **1335**
blocking, using junction transistor with α > 1, **1893**
as radar pulsers, **3307**
rapid-action, using transistors, **356**
bridge-stabilized, general analysis for different forms of, **2997**
constant-frequency, analysis for, **697**, **(D)2996**
crystal-controlled, frequency stability of, **2998**
Moscow conference on piezoelectricity, **2770**
effect of electrical fluctuations on, **55**
effects due to nonlinearity in, **53**
fluctuations of amplitude and phase in, **1996**
f.m., gain characteristic inside pull-in range of, **3560**
noise in, **1649**
heterodyne, very low-frequency, **59**
influence of noise in, **1648**
klystron, inherent frequency fluctuations of, **1997**
LC, with amplitude limitation by biased diodes, **2667**
frequency stability of, analysis for, **2337**
with load coupled through long feeder, frequency stability of, **3305**
Meacham-bridge, 1-Mc/s, using transistors, **1654**
microwave, using cavity resonator and molecular beam, **402**, **403**, **3710**
increase of *Q* factor by regeneration in, **348**
using disk-seal valves, circuits and measurements for, **1658**
Oscillators, microwave, based on electron spin resonance, **3032**
molecular-beam, theory of, **3709**
mm-λ, Čerenkov radiation as basis of, **1004**
based on plasma oscillations in gas or semiconductor, **1681**
multivibrator, bistable, design of, **1006**
using junction transistors, **2340**
triggered, stabilization of pulse duration in, **357**
using triode-pentode valves, **2999**
using negative-resistance elements, theory of, **3303**
nonlinear, frequency-response analysis of, approximate method for, **56**
nonsinusoidal, 4-position flip-flop, topological analysis for, **2339**
phase-shift, cathode-follower, **1005**
RC, using transistors, **3308**
wide-range, using d.c. coupling, **2335**
3-phase, asymmetrical, for wide-band f.m. system, **1650**, effect of cathode impedance on, **1998**
using point-contact transistors, frequency stability of, **1334**
pulse, peak power of, method of determining, **211**
survey of, **2338**
thyratron circuit, for 240 V 10-μs pulses, **3000**
with continuously variable output, **2341**
using transistors, **358**
triggered, **2000**
relaxation, phase-controlled, **1651**
sawtooth, using junction transistors, **1999**
stabilized, Pound, modification facilitating adjustment of, **355**
super-regenerative, transistor-type, 500-c/s, **3002**
synchronized, rejection of unwanted tones and noise by, **2334**
using tandem transistors, **3001**
using transistors, for a.c. bridges, **529**
temperature-stable, for telemetry, **2342**
u.h.f., using double-ended lighthouse-type valve, **2589**
valve, comprising nonlinear coupled systems, topological analysis of, **2666**
stability of, comprehensive theory of, **54**
variable-frequency, locked to crystal-controlled signal, **57**
for S-band radar equipment, **3679**
stabilized against resonator drift, **3306**
u.h.w., with nonlinear capacitors, **3663**
v.l.f., using cathode followers as phase-shift elements, **1333**
weakly coupled, mutual synchronization of, **3678**
Oscillograms, accuracy of estimation of, **531**
Oscillographs, light-beam, writing speed of, **530**

P

Particle accelerators, betatron, energy stability of Illinois machine, **1176**
15-MeV model for nondestructive testing, **877**
20-MeV, at Manchester, **876**
cascade-generator type, 4-MeV, **1506**
circular, design of pole faces using electrolyte tank, **2503**
with circular guide field, radiation damping in, **872**
cyclotron, beam characteristics of, method of improving, **3163**
with sectional magnet, **3503**
variable-energy, **229**
e.s., for proton beams up to 3·25 MeV, **1838**
linear, shunt resistance of, measurement of, **1813**
using waveguide, effect of beam loading in, **230**
giving 45-MeV electrons, **879**
review of, **878**
for MeV particle energies, Budapest model with Van de Graaff generator, **3845**
proton synchrotron, at Birmingham, injection phenomena in, **2860**
at Canberra, **2858**
synchrocyclotron, Liverpool machine, extraction of proton beam from, **873**
nonlinear extraction of beam from, **1508**
synchrotron, betatron, frequency measurements on, **2483**
constant-gradient, space-charge and ionization effects in, **2186**
for producing 300-MeV electrons, **874**
scattering of protons by residual gas in, **2185**
with storage rings to increase available energy, **3846**
strong-focusing, betatron oscillations in, **2859**, **3165**
electromechanical analogue computer for studying, **2973**
gas scattering in, **1840**
influence of magnetic-field errors on betatron oscillations in, **1509**
influence of radiation on, **3504**
linear theory of, **1839**
oscillations due to radiation fluctuations in, **3164**
required accuracy of alignment in, **875**
340-MeV machine at Glasgow, **538**
Particles, charged, motion of, in magnetic field, **2704**
trajectories of, in magnetic field, floating-wire method of investigating, **1697**
Permeability, high-frequency, of conductors, formula and abac for, **2307**
measurement of, method using cavity resonator, for toroidal cores, **2848**
'thin-sample' slotted-line method for, **2845**
r.f. permeameter for measurement of, **3482**
Permeameter, modified Hovici, **2164**
Phase, indicator circuit for, fast-acting, **3835**
measurement of, c.r.o. method for, accuracy of, **2484**
in networks, error sources in, **3477**
meter, a.f., using transistors, **1167**
Phase, meter, comparison-type, using delay line, **1166**
shift, produced by quadripole, measurement of, **3479**
shifter, microwave, using rotating helix, **321**
90°, wide-band, **2645**
Phosphors, alkaline-earth oxide and sulphide, activated with Eu, **1064**
with associated donor-acceptor luminescent centres, **2405**
$(Ca, Na)_2P_2O_7$, preparation and optical properties of, **2079**
Ca_2SiO_4, influence of crystal structure on luminescence of, **1067**
Ca_2SiO_4, Mn,Pb and $(Zn,Be)_2SiO_4$-Mn, luminescence spectra of, **136**
Cd fluorophosphate, Pb- and Mn-activated, **2408**
CdS, field breakdown of, **135**
influence of Cu and Fe additions on, **3750**
optical absorption spectrum of, **774**
CdS-Ag, model for, **1734**
CdS and ZnS, optical properties at 0·6–14 μ λ, **1062**
crystal, morganite, survey of properties of, **132**
destructive effect of H^+ ion bombardment on, **3752**
dielectric-constant variation under infrared irradiation, **133**
effects of positive-ion bombardment on, **445**
electroluminescent, boron nitride, preliminary note on, **3081**
dielectric dispersion of, **782**
effect of electron traps in, **3755**
temperature dependence of brightness waves for, **2761**
high-conductivity, for cathodoluminescent lamps, **3756**
impurity semiconductor, statistical-kinetic theory of, **821**
morganite-crystal, physical chemistry of, **778**
$LaAlO_3$ perovskite-type, experimental investigation of, **1065**
$MgF_2.MgO.SiO_2$, containing TiO_2 or TiO_2 + MnO, luminescence of, **1066**
MgO, field-enhanced luminescence of, **138**
oxygen-dominated, effect of departure from stoichiometry in, **3397**
recombination mechanism of, **3076**
transparent coatings of, production of, **444**
for tricolor television tubes, experimental investigation of, **783**
(Zn, Cd)S, dielectric constant of, effect of illumination on, **2406**
infrared stimulation and quenching of, **131**
(Zn, Cd)S-Mn, effects of electric fields on, **2760**
(Zn, Cd)S-Mn and ZnS-Mn, under X-ray excitation, effect of electric field on, **2081**
ZnS, accumulation property and electron levels in, **775**
effect of photo-irradiation in alternating field, **777**
electroluminescence of, characteristics of, **3754**
frequency dependence of, **2082**
mechanism of, **1071**
theoretical and experimental investigation of, **2764**
electroluminescent, dielectric behaviour of, **2411**
influence of temperature on, **2409**
time-average output of, **2410**
experimental investigations of conductivity and structure of, **2759**
field-induced colour shift in, **3398**
hexagonal, X-ray powder diffraction data for, **1735**
with rare-earth activators, optical properties of, **2080**
single crystals, electro-luminescence in, **781**
under ultraviolet excitation, effects of electric field on luminescence of, **2763**
ZnS-Ag, deterioration caused by positive-ion bombardment in, **1070**
luminescence of, effect of electron bombardment on, **3592**
ZnS-Ag and (Zn, Cd)S-Ag, effect of heat treatment on luminescence of, **2762**
ZnS-Cu, decay and temperature dependence of **3080**
effect of red and infrared radiation on emission from, **443**
electron levels in, **2758**
reduction of luminous output under intense excitation, **3079**
state of Cu activator in, **134**
ZnS-Cu, Cl, luminescent centres in, **776**
ZnS-Cu, Co, capture and recombination cross-sections in, **442**
effective cross-sections of photo-liberated electrons in, **2407**
ZnS-Mn films, temperature variation of electroluminescence of, **1069**
ZnS-type, spectral distribution of infrared-stimulated phosphorescence of, **1431**
ZnS and CdS, infrared luminescence of, **3753**
ZnS and (Zn, Cd)S, electroluminescence waveforms in alternating fields, **446**
Photocathodes, Sb with alkali metals, high sensitivity of, **608**
Photocells, barrier-layer, Ge *p-n* junction, **615**
Se, effect of radioactive radiation on, **2567**
non-additivity in, **2921**
time stability of, **613**
electron-multiplier, with Ag-Cs photocathode, dark current of, **930**
cathode uniformity and other characteristics of, **297**
with current amplification of 500 000, **299**
dark current instability in, cause and cure of, **610**
duration and shape of current pulses in, **298**

flicker noise in, 3587
low-delay design using two-sided dynodes, 1896
noise in, hysteresis effect in, 929
optical feedback effects in, 1580
for scintillation counting, focusing of, 3248
statistical study of multiplication in, 296
transit-time spread in, 2247
image-intensifier, realizable light gain in, 871
PbS p-n junction, preparation and properties of, 3250
photoconductive, CdS, properties and applications of, 2248
Ge filament, signal/noise ratio of, 2565
large-area, made from CdS powder with plastic binder, 612
using microcrystalline or sintered layers, 611
Photocells, photoconductive, PbS, inertia effects in, 3249
specific noise of, 2249
PbS, PbTe and PbSe, manufacture and applications of, 773
reduction of noise in, 1248
photoemissive, discontinuities in saturation curves of, 609
flicker noise in, 3569
photodiamode, operation with alternating magnetic field, 1895
spectral response of, apparatus for study of, 3568
vacuum-type, abnormal response of, 2905, 3567
photovoltaic, Ge, influence of diffusion on, 614
infrared-sensitive, crystal diodes and transistors as, 935
PbS, preparation and experimental investigation of, 3251
semiconductor p-n junction, efficiency as solar-energy converters, 2250, 2566
Si p-n junctions, noise in, 1899, 1900
spectral sensitivity of, temperature variation of, 1898
spectral sensitivity of, experimental determination of, 2246
Photoconductive materials, (See also Semiconductors)
amorphous Se and Sb_2S_3, time lag of, 3078
CdS, comparison of surface and volume effects in, 2755
influence of Cu and Fe additions on, 3750
infrared quenching in, 1060
sensitization by cyanine dyes of, 2402
single crystals, dependence of photocurrent on magnetic field in, 2756
slow build-up of photoconductivity in, 1061
CdS-Ag, model for, 1734
CdS and CdSe, investigation of conduction and infrared quenching in, 441
cyanine dyes, 2401
Ge and Si, energy-band theory of, 772
PbS films, effect of oxygen on, 3751
PbS, PbTe and PbSe, properties and applications of, 773
pyrolyzed cellophane and orlon films, experimental investigation of, 3394
P_3Zn_2, trapping effects in, 3395
recombination mechanism of, 3076
silver halides, electron mobility in, pulse studies of, 1057
SnO_2, relaxation of, 3396
spectral distribution curves for, 2753
stibnite (Sb_2S_3), experimental investigation of, 479
survey of properties of, 768
Te, recombination processes in, 1430
Zn and Cd sulphides, selenides and tellurides, 770
(Zn, Cd)S phosphors, infrared stimulation and quenching of, 131
ZnS, and photo-luminescent modulation in alternating field, 777
thermoelectric force of, 2403
Photoconductivity, (See also Semiconductors)
of CdS, effect of infrared radiation on, 130
Photoelectric effect, in metals, review including Russian work on, 373
Photoelectric emission, (See also Electron emission)
from Ag directly into NaCl, TlCl and TlBr, 2757
from ferromagnetic materials, 1059
from graphite, measurements of, 771
of metals exposed to ultraviolet radiation, 1058
use in demonstrating beats between independent light beams, 710
Photoelectricity, research on, survey of, 68
Photoemissive materials, Cs-Sb layers, optical and electrical measurements on, 3749
Photomagnetoelectric effect, in CdS, 2404
in Ge, saturation of, 2113
Photovoltaic effect, in PbS films, variation with direction of illumination, 3077
Physics, statistical problem and theory of probability in, 1349
Piezoelectric materials, (See also Quartz)
$BaTiO_3$, anisotropy of, 789
ceramics, constants of, 3082
effect of firing cycle on, 1434
electromechanical properties of, 2083
ultrasonic velocities in, 144
preparation by conversion of $BaTiO(C_2O_4)_2 \cdot 4H_2O$, 3399
solid solutions, experimental investigation of, 3407
ceramic solid solutions, experimental investigation of, 1073
lithium sulphate and potassium sulphate, optical spectrum of, 1063
Moscow conference on, 2770
production methods developed at British Post Office Research Station, 2416
Q factor of, method of measuring, 2479
r.f. absorption spectra of, 455
Rochelle salt, infrared absorption spectrum of, 2089
Plasma, carrier density in, pulse-probe method for determination of, 3336
charge segregation and oscillations in, magnetohydrodynamic theory of, 3346
conductivity of, calculation of, alternative methods for, 1366
theory of, 382
electron, e.m. radiation from, 3706
electron oscillations in, 86
e.m. wave interaction experiments in He, 1383, 3351
Faraday effect at 10 kMc/s in, 732
floating-probe methods for measurements on, 2687
kinetic theory for case of 'Maxwellian' molecules, 2691
Langmuir probe method of investigating, theory of, 1024
in magnetic field, particle transport in, 1030
magnetohydrodynamic shock waves in, structure of, 2701
oscillations in, dipole resonant mode of, 2693
in external field, 3018
potential discontinuities in, 3339
Plasma, stationary waves in, 2029
in stellar atmospheres, effect of magnetic field on convective instability in, 3371
thermal conductivity of, 1029
waves in, theory of, 731
Potential, distribution in grids, partial-difference equations for, 1019
of insulating surfaces, vibrating-capacitor method for measuring, 204
of multipoles, analysis for, 2349
Potentiometers, a.c., for amplitude and phase measurements, 3148
for feeding digital data into computer using teleprinter tape, 1314
switch-dial, for low resistance applications, 3487
Power, measurement of, for pulse generator, 211
microwave, measurement of, application of Hall effect to, 1488
resistive film radiometer for, 1829
at 3 cm λ, efficiency of thermistors and bolometers for, 525
Power supplies, (See also Batteries; Generators)
balanced, providing equal and opposite voltages, 3537
for c.r. tube, using transistor oscillator, 3887
using Ge and Si p-n junctions bombarded by β particles, 2437
for instrument calibration, high-power, 1554
isotope-irradiated photocells as, 3567
low-ripple, regulated, for 350–1000 V, 572
based on photovoltaic conversion of solar energy by semiconductor p-n junctions, 3769
semiconductor solar-energy converters as, 3838
for telecommunications, automatic, 'no-break' arrangements for, 2543
transistor oscillator unit for, 1555
using valve rectifiers with capacitor input, design of, 912
vibrators, survey of, 1216
900-V, using transistors, 3539
Probes, for microwave near-field measurements, 2170
magnetic, for measurements on synchrotron, 2849
Public-address systems, for open spaces, arrangement of loudspeakers for, 3628
using radio carrier, 2278
stereophonic, open-air, at Hollywood, 317
Publications, radio, in U.S.S.R., 2269
Trans. Inst. Radio Engrs, Index 1955, 2594
Pulses, at cm λ, transmission in waveguide and cavity resonator systems of, 344
measurement of amplitude of, c.r.o. method using direct-voltage calibration, 2844
measurement of, standard 55 I.R.E. 15.S1 on, 517
microwave, regeneration of, in repeater chain, 1655
μμs, transmission-line devices for use with, 60
for waveguide testing, 1808
separate trains of, frequency of coincidence of, 902
technique for measurement of μμs time intervals, 2835
Pyroelectric effect. See Ferroelectric materials.

Q

Q-factor, of cavity resonators, measurement of, 3141
of magnetron cavity, directional-coupler method of measurement for, 2493
of piezoelectric crystals, method of measuring, 2479
Quartz, (See also Resonators, piezoelectric)
adsorption of NH_3 on, 3426
anelasticity and dielectric loss of, 3811
artificial, technique for eliminating bubbles in, 841
charging of surfaces by each other, 447
crystals, relaxation processes in and Q of, 2826
dielectric constant of, temperature and frequency variation of, 1474
dielectric losses, at low temperatures and low frequencies, 451
and polarizability of colour centres in, 2768
dislocations in, experiments demonstrating, 842
fused, velocity of ultrasonic waves in, 1131
investigation of piezoelectric oscillations in, X-ray diffraction method for, 1473
piezoelectric structure of, 3083
rutile inclusions in, intergrowth of, 2460
and silica compounds, effect of u.v. and X-ray irradiation on, 3460
single-crystal, density in relation to imperfections in, 838

R

Radar, airborne, equipment for weather indication, 1426
video amplifier using transistors for, 3322
weather-surveillance, commercially available equipment, 435
for airport terminal, Type-S232, 3387
automatic tracking systems, French-type, 3389
automatic tuning and a.f.c. system for, 2075
detection of pulsed signals in noise in, 439
echoes, from mixture of ice and air, back-scattering coefficient for 1–10 cm λ, 899
from birds and insects, 3742
effect of a.g.c. on tracking noise in, 2747
elevation angle measurement by, 2746
f.m., high-accuracy, 3746
for mercantile marine, 3072
harbour surveillance system at Dunkirk, 1727
high-resolution pulse technique for, 1808
in H.M. telegraph ships, modernization of, 2539
illumination of operation rooms and signal detection threshold, 1730
marine, and navigation aids, symposium on, at Boston, Mass., 1954, 1726
Radar, marine, ramark beacon for use with, 1056
modulators for, frequency divider for synchronizing, 359
and navigation aids, international conference at Scheveningen, 1955, 123
network with centralized control, 1728
polarization power scattering matrix for, 1425, (D)2399
portable, for aircraft landing system, 126
p.p.i. display, combined with computed position markers, 2398
relay systems with compressed bandwidth for, 3744
primary, a.f.c. using reflex klystron for, 3068
probability of detection and number of illuminating pulses in, 3067
pulsed, with circular polarization, reduction of rain clutter at 3 cm λ, 763
range of, improved method of calculating, 1427
resolution of echoes from closely spaced reflecting layers with, 764
search-type, angular accuracy of, 3747
servomechanisms for, stability and time response of, 269
rain observations at Poona, 127
reception of weak signals in noise, review of methods for, 3743
recommended procedure for operation and data collection during severe weather, 2074
reduction of clutter in, by use of logarithmic receivers, 2076
reduction of rain clutter in, turnstile waveguide system for, 1729
reflections from metal strips in, 1731
sea clutter, in, 3390
secondary surveillance systems, 3388
simulator, storage-tube type, 2077
for training purposes, 3745
using ultrasonic delay line, 3070
3-dimensional, 3071
test equipment using transistor pulse generator for, 2496
thunderstorm observations by, 765
vehicle-speed indicator system using, 1732
vertical coverage diagram for, effect of rough sea surface on, 438
video testing based on transient response in, 2474
1·25-cm-λ equipment, detection of clouds and precipitation by, 2749
Radar Research Establishment, Malvern, organization and program of, 3596
Radiation, (See also Aerials)
e.m., Čerenkov, from bunched electron beams near medium with complex refractive index, 3350
from electron in magnetic field, 2364
theory of, 3700
due to gyromagnetic resonance in Penning gauge, 73
from electron plasma, 3706
mm-λ use of bunched electron beams for producing, 3701
'molecular-ringing', from molecules driven by e.m. field, 3707
from molecules in h.f. field, 3033
due to motion of charges near inhomogeneity, 3708
quantum theory of, survey of, 2011
from source on metal body, effect of surface curvature in, 3702
particle and γ, effects in solids due to, 2034
Radio astronomy, (See also Cosmic radiation, r.f.; Solar radiation)
absorption of 3.5-m radiation in nebula *NGC* 6357, 1395
aerial smoothing of brightness distribution in, graphical method for correction of, 98
cosmological significance of radio stars, 405
distribution of radio stars, discrepancies between results of different observation methods in, 3712
early history of, 2706
emission from galactic deuterium, observations of, 3039
emission from novae and supernovae at 3·5 m λ, 2708
galactic halo and origin of cosmic rays, 2035
galactic survey at 400 Mc/s, 735
identification of Class II radio stars, 1394
International Scientific Radio Union special reports on, 1043
lunar occultation of radio source in Gemini, 97
Magellanic clouds, determination of masses of, 2709
motions of, 21-cm-λ study of, 1702
measurement of diameter of radio stars using interferometer with post-detection correlation, 1700
nature of radiation from galaxy *NGC* 4486, 3356
observations, of Crab nebula during eclipse by moon, 2711
of deuterium in galaxy at 91·6 cm λ, 408
of discrete emitters on 3·2 cm λ, 1044
on some bright galaxies, 736
polarization measurements on radiation at 1·9 m λ from three intense sources, 3714
radiation, from Jupiter on 18·3 Mc/s, 2710
from Venus at 11 m λ, Class-II type, 3358
impulsive type, 3357
radio-star scintillations, correlation with spread-F echoes of, 2731
r.f. source near galactic centre, observations at 3·5 m λ on, 3713
r.f. source Hydra-A, angular-size variations of, 1703
intensity variations of, 1701
r.f. source on Jupiter, location of, 406
mechanism of radiation from, 407
nature and spectrum of, 2036
scintillations of stars at 50 Mc/s, 422
survey of cosmic sources at 600 Mc/s, 2707
telescope, Harvard University 60-ft instrument, 3715
upper-atmosphere investigations by, 2368
Radio links, Austrian u.s.w. network, 1548, 3534
Italian Post Office network, Bologna-Pisa extension to, 2535
microwave, Japanese, using reflex circuit with travelling-wave valves, 1212
Radio links, microwave, relay, between Saint John and Halifax, 2537
wide-band, survey of construction techniques for, 568
pulse, for multiplex W/T, R/T and program transmission in Greece, 1207
transmission problems, review of, 2199
v.h.f., f.m., between Puerto Rico and Virgin Islands, 2536, 3218
long-distance between Shetlands and Norway, 3879
Radiometers, comparison of modulation and 2-receiver types, 535
for thermal-noise measurements, null-indicating, 222
sensitivity of, 221
Radiosonde, Type-M10 I, for measurements of refractive index of air, 3367
Radiotelegraphy, (See also Communication systems, etc.)
communication circuits, differences in reception in two directions on, 3208
frequency-shift system, desirability of a.f.c. in receivers for, 253, (D)2209
Janet system using meteor-trail transmission path, 3533
multiple-frequency-shift system for, 564
signal waveform in, influence on adjacent-channel interference of, 2522
technique adapted for v.h.f. trans-horizon propagation, 2532
using T.O.M. equipment with automatic error correction, observations at Frankfurt a. Main, 2533
Radiotelephony, (See also Communication Systems; Radio Links)
Copenhagen-Thorshavn link, 3217
Radomes, sandwich structure, design of, 1965
Reactance, measurement of very low values by Q-meter method, 522
Reactors, crossed-field, operating mechanism and applications of, 339
for magnetic amplifiers, optimum core shape for, 340
saturable, frequency dividers using, 359
in magnetic amplifiers, behaviour of, analysis of, 3320
use in pulse generators for radar modulators, 36
Receivers, (See also Television)
broadcast, Japanese, using transistors, 3204
communication, single-heterodyne, Type BX925A, 3527
Telefunken rack-mounted installations for telegraph services, 1536
design for reduction of fire hazards due to, 3205
double-superheterodyne, for telemetry, 2526
f.m., design giving improved capture ratio in, 3865
fixed-tuned, 2880
interference radiation from, methods of measurement of, 3826
narrow-band, filter requirements for minimizing impulse noise in, 2523
embodying pulse-counter discriminator, 2524
switched-tuned, with reactance valve a.f.c., 3526
for frequency-shift radiotelegraphy, desirability of a.f.c. in, 253, (D)2209
noise factor of, chart showing relation to bandwidth and aerial-circuit power, 553
selective circuits for, effective noise bandwidth of, 903
signal-seeking, circuit for stopping seeking action in, 555
superheterodyne, alignment of, 3866
high-selectivity, for 6–36 kc/s, 3530
pentagrid converters for, 3590
v.h.f./u.h.f., for field-strength recording, 3528
s.w., communication, Type E104, 556
tuned r.f., 554
Reception, (See also Field strength; Television; Wave propagation, e.m.)
diversity, effect of signal correlation on advantage gained from, 1862
for u.h.f. long range communications, 254
statistical analysis for, 3525
theory and practical circuit for, 2881
f.m., 'spitting' effect due to insufficient bandwidth in, 552
in noise, statistical theory of, 557
on radiotelegraphy circuits, differences in the two directions of, 3208
of weak radar signals in noise, review of methods for, 3743
Rectification, at Cu-Cu_2O junction, effect of crystal orientation on, 2809
Rectifiers, (See also Semiconductors; Valves, crystal)
crystal, chart for evaluating constants of, 2241
Cu_2O, capacitance of, temperature dependence of, 270
Ge, alloyed-junction, Type-EW54, 1217
point-contact, oscillations in, analysis for, 696
influence of contact-surface state in, 3240
power-type, 2886
physical and engineering aspects of, 574
half-wave circuits, characteristics of, 3888
ignitron, semi-conducting igniter for, 272
p-i-n, dependence of current density on width of intermediate zone in, 598
power, Ge and Si p-n junction types, review of development of, 2885
Si diffused p-n junction types, 3225
Si diffused p-i-n junction, theoretical investigation of characteristic of, 3226
Se, effect of various impurities on, 271
effectiveness of CdSe intermediate layer in, 165
for radio and television equipment, performance and rating of, 3540
Si, use as ion detectors, 2181
Si junction, production and properties of, 3889
TiO_2, for high-temperature operation, 1218
Refractive indices, of gases, at 72 kMc/s, 1016
Regulation, (See also Control systems; Stabilizers)
automatic, U.S.S.R. bibliography for 1954, 537
thyratron grid-control circuit for, 2223
Relay systems, (See also Communication systems; Radio links; Television)
Relay systems, for local distribution of broadcast material, 1210
v.h.f., for British Forces broadcasting network in Germany, 1213
Relays, cryotron, based on control of superconductivity by magnetic field, 1980
frequency-sensitive, using 'diode-pump' integrator, 1007
with inactive zone and hysteresis, transfer function of, 1979
Russian bibliography for 1950–1954, 690
Research, institutes, electrical engineering, Italian, Galileo Ferraris, 957
literature, organization for dissemination of, 1600
radio, international cooperation by U.R.S.I. and I.R.E., in, 3264
Resistance, of Fe-Ni alloys, effect of magnetic field on, 1777
of glass, d.c. method for determination of, 521
measurement of, survey of methods for, 3151
of metals, at high current densities, 456
of superconducting tin at 7·3 × 10^{10} c/s, 1776
standards of, Ni-Cr-Al-Cu 'evanohm' alloy wire for, 3085
of various materials in various geometric forms from 10 c/s to 160 kMc/s, calculation of, 1634
very high, Townsend circuit with slide-wire cylinder for measurement of, 3473
of water and electrolytes, l.f. measurements of, 520
Resistivity, measurement of, 4-probe apparatus for, 2476
of metals, electron-phonon-interaction theory of, 1355
heated by high-density currents, 3690
in magnetic field, thermodynamic theory of, 1390
of semiconductors, measurement of, four-probe method for, 1100

microwave measurement of, resonant-cavity method for, 2158
of thin metal films, 3762
Resistors, coaxial, with trapezoidal outer conductor, 2313
composition, contact noise in, 34
high-temperature operation of, effect on length of life of, 2316
injection-moulding process for, 35
impedance of, frequency variation of, 33
nonlinear, bridge for measurements on, 2854
positive, frequency conversion with, 2978
SiC, voltage-dependent, measurements to determine mechanism of, 2314
Resonance, (See also Absorption)
cyclotron, under anomalous skin-effect conditions, 3334
and energy-band structure in Bi, 2140
in semiconductors, theory of, 3421
electron, report of Geneva conference on radio-frequency physics, 3031
spin, application in microwave oscillators and amplifiers, 3032
ferrimagnetic, solutions of equations of, 1122
ferromagnetic, microwaves, in Mn ferrites, 1791
in Ni-Fe ferrites, 492
and permeability of Fe, 2134
possible source for line width in, 2033
gyromagnetic, in Penning gauge, r.f. radiation due to, 73
magnetic, effect of perturbing oscillations on, 1386
of ferrites in u.h.f. circularly polarised field, 2455
in InSb, 1108
and GaSb, 1107
line widths and relaxation times in, 1388
at mm λ and cm λ, in α-Fe_2O_3, 486
nuclear, fluxmeter based on, 3480
influence of field inhomogeneity in, 404
radio-spectroscope study of, 1694
nuclear-spin echoes in, information storage by, 1038
microwave, in α-Fe_2O_3, 2132
cyclotron, in Ge-Si alloys, 1456
in Ni and Ni alloys, experimental investigations of, 829
paramagnetic absorption, in metals, 186
nuclear, in range 700 Mc/s–1 kMc/s, spectrometer observation of, 1696
paramagnetic, autodyne detector for, theory of, 1664
in glass, 502
measurements on αα-diphenyl-β-picryl hydrazyl at 20 Mc/s, 2703
in transition-group ions, survey of, 2139
Resonators, (See also Piezoelectric materials)
acoustic, hollow-wedge, 1
perforated-panel, coupled vibrations in, 3617
sound absorption by, influence of geometrical arrangement on, 3604
cavity, almost conical, theory of, 1640
coupled, parabolic-tube, 2656
theory of, 2655
cylindrical, analysis for, 685
design method using curvilinear coordinates for, 3669
containing dielectric, natural frequency of, 2637
effect of ferrite sphere on frequency of, 2658
excited harmonically by bunched electron beam ('harmodotron'), 1000
excited by thin aerials, theory of, 1641
containing ferrites, field distribution in, 347
modes of oscillation in, effect of short-circuit on, 686
Q of, measurement of, 3141
shunt resistance of, calculation of, 1324
spherical frustum, 2654
step-by-step method for design of, 17
transmission of pulses in, analysis for, 344
crystal, analysis for vibrations of, 1322
with divided electrodes, quadripole equivalent network for, 2653
Moscow conference on piezoelectricity, 2770
Resonators, high-Q, piezoelectric and magnetostrictive, equivalent-circuit constants of, 3476
linear, general theory of, 2650
piezoelectric, multimode, electromechanical coupling coefficients in, 647
Q factor of, pressure dependence of, 3668
determination of, 523
quartz, automatic vacuum-plating equipment for production of, 503
for frequency stabilization of oscillators, 2998
overtone, for 40–50 Mc/s, 2330
spectrum analyser for, 202
temperature coefficient and overtone order of, 346
temperature variation of frequency of, 1323, for different cuts, 1639
RLC series circuits, analysis for transients in, 2329
travelling wave, using directional coupler with waveguide loop, 1325
ultrasonic, quartz, radiation resistance of, experimental determination of, 1282
Rheostats, concavity of resistance-shaft-position characteristic of, 1635, 3292
Rubber, conducting, properties and applications of, 1143

S

Scattering, (See also Diffraction; Sound; Wave propagation)
of e.m. waves, from random surface, 1382
of light, by inhomogeneous solid, 1353
Screening, magnetic, by iron tubes, 2367
Seals, ceramic/metal, design of and materials for, 193
Semiconductors, (See also Crystals; Photoconductive materials, etc.)
Ag_2Te, electrical and optical properties of, 2801
in alloys, valence and atomic size of, 2798
AlSb, effect of impurities on conduction mechanism in, 1106
aromatic hydrocarbons, electrical properties of, 2093
B and B_{12} Al, frequency and temperature variations of conductivity of, 604
Bi_2O_3, conductivity measurements on, 3110
bipolar diffusion in, for case of spherical symmetry and external field, 2097
mathematical analysis for, 1752
Bi_2Se_3 and Bi_2Te_3, diffusion of Sn and Sb in, 1110
Bi_2Te_3, thermal conductivity of, 2449
thermoelectric properties of, 1083
carbon, experimental investigation of, 2783
carrier-concentration disturbances in, analysis for, 792
carrier lifetime in, 'light-disk' method of measuring, 795
CdS, hole mobility in, evidence for, 3791
single crystals, noise at high field strength in, 3792
CdTe, dielectric constant of, 3790
electrical properties of, 3759
optical properties and energy gap of, 3440
ceramics based on WO_3, preparation and properties of, 3109
characteristic times of electronic processes in, 3414
chemical bond in, 2781, 3422
chemical interaction between impurities in, 3409
compounds, binary, zone-melting processes for, theory of, 2810
intermetallic, energy levels in, effect of impurities on, 1748
isomorphism of, 2096
with Mg, electrical properties of, 1753
photoeffects in, 769
possible compositions of crystals in, 2095
stoichiometry of, 3412
symposium on, 145
with zinc-blende structure, photoelectric properties of, 2779
with measurable vapour pressure, zone-melting processes for, 3445
of Se and Te, 2091
ternary, of Tl, Sb, and As selenides, experimental investigation of, 3417
of Tl-Sb-Se, experimental investigation of, 1751
$Tl_3Sb_3Se_4$, structure of, electron-diffraction study of, 2448
concept of hole in, network-analogy explanation of, 1746
conduction in strong electric fields in, equations for, (D) 458
conductivity and Hall effect in, 2092
conferences, U.S.S.R., 1955, 459, 3767
contacts between, field-emission effects at, 1084, 3091
copper phthalocyanine, photoelectric properties of, 2428
$CrSb_2$, thermoelectric properties of, 3773
crystal structure of, X-ray camera for investigating, 840
CsCl conductance mechanisms and thermal transition in, 1103
Cs_3Sb, secondary emission from, 3787
Cu and Tl salts, spectral lines attributable to exciton in, 2099
$CuFeS_2$, rectifying and other properties of, 164
Cu_2O, contact phenomena observed with, 3441
crystal growth at high temperature, 2799
in Cu_2O-Cu system, effect of oxidation temperature on conductivity of, 159
excitation spectrum of excitons in, 3104
exciton absorption in, 1769
films, surface structure and contact potential difference of, 3106
intergrowth with Cu of, 3442
lattice defects and absorption of e.m. radiation by, 2446
occlusions of CuO in, 3105
surface conductivity of, 2117
current noise in, relative influence of majority and minority carriers on, 1111
Semiconductors, current noise in, theory of, 480
theory of 1/f spectral distribution of, 817
cyclotron resonance in, theory of, 3421
degeneracy of electron gas in, review of work on, 2426
with degenerate valence band, transport of heavy and light holes in, 2425
diamond, electrical and optical properties of, 2784, 2785
electronic band structure of, 3774
experimental investigation of, 463
theory based on 'defect bond' for, 2786
with diamond structure modified by alloying or pressure, energy levels of, 839
diffusion of electrons and holes down temperature gradient in, 1079
drift-mobility measurements on, diffusion effects in, 2777
effect of magnetic field on, theory of, 2100
effects of particle and γ radiation on, 2034
effects of pressure on, 2424
electron mobility of, correlation with heat of formation of, 3419
energy gap of, determination from diffuse reflection spectra, 2101
field emission from, theory of, 717
fluctuations of numbers of electrons and holes in, calculation of, 793
formation of p-n junctions by solute redistribution during solidification in, 1758
GaSb, effects of fast-neutron bombardment in, 1770
Ge, absorption of 39-kMc/s radiation in, 3100
acceptor levels in, theory of, 808
action of etchants on, 2106
amphoteric impurities in, 1763
as anode in electrolyte, experimental investigation of, 3785
avalanche breakdown in, 471
barrier-layer photoelectric effect in, influence of diffusion length and surface recombination on, 614
carrier-deficit phenomena in, 1096
carrier lifetime in, temperature dependence of, 3098
conductivity of, effect of surface treatment on, 1448
cyclotron resonance in, observation of quantum effects in, 1093
cyclotron resonance of holes in, theory of, 1092
diffusion of Sb, As and In in, 809
dislocations in, electrical properties of, 3428
along grain boundaries, 1761, 1762
microscope observations of, 466
theory of, 3427
doped, with Au, properties of grain boundaries in, 469
with Cu, recombination and trapping in, 3781
with Mn, photoconductivity in, 3435, properties of, 1091
with Ni, carrier capture probabilities in, 1764, impurity-type conduction in, 2792
doubly charged impurity sites in, experimental investigation of, 3430
effect of gamma radiation on, 3438
effect of heat treatment on charge carriers in, 2104
effect of heating on, lifetime of minority carriers in, 2794
effect of magnetic field on, experimental investigation of, 2114
effect of plastic deformation on optical properties of, 154
effect of pressure on electrical properties of, 1452
effect of water vapour on current at p-n junctions in, 3433
elastic constants of, X-ray investigation of, 475
characteristics of, temperature dependence of, 1450
electrical properties at low temperatures of, 153
electrolytic etching technique for revealing junctions in, 473, 2444
electrolytic-stream etching technique for, 2797
electron mobility in, field dependence of, 3782
energy-band structure deduced from magnetic data, 472
energy-level calculations for, corrections for complex band structure in, 470
etching at grain boundaries in, 1446
etching rate of, experimental investigation of, 1445
evaporated films, structural changes due to impact of electron beam on, 811
excess current noise in, 1454
Faraday rotation of microwaves in, 1098
features revealed by electron-microscope examination of etched surfaces, 1447
filaments, spectrum of excess noise in, 2445
galvanomagnetic properties of, 155
growth of crystals from germane, 3777
growth twins in, 3101
hole trapping after electron bombardment in, 3780
infrared absorption in, 2110
junction formation by melt-quench process in, 1453
longitudinal photomagnetoelectric effect in, 1449
magnetic susceptibility study of, 1451
minority-carrier extraction in, 1443
minority-carrier lifetime in, effects of dislocations on, 2440
Nernst effect in, 3437
noise in, Hall-effect investigation of, 1101
n-type, magnetic susceptibility of, 2107
magnetoresistance of, 3783
mobility of electrons in, 2111
oriented, Hall effect in, 2112
photoelectric emission from, 2754
photomagnetoelectric effect in, saturation of, 2113
plastic flow in, delay time of, 2443
p-n junctions, obtained by pulse heating in, 3434
temperature dependence of photocurrent in, 1097
water-vapour-induced current on, 807
Semiconductors, Ge, p-type, effect of neutron bombardment on, 468
precipitation of Cu in, 1090
production of single crystals by zone-levelling technique, 3102
radioactive isotope Ge^{71}, observations of disintegration of, 3784
rate-grown junctions for h.f. transistors, 467
recombination in, photoconductance-decay method for studying, 810
at thermal acceptors and donors, 2105
recovery from effects of Cu contamination in, 1094
removal of Cu from, 1444
resistance of, effect of contact pressure on, 1095
variation in magnetic field, 2796
self-diffusion in, 3429
single crystals, direction of slip in, 1099
solubility and diffusion of Ni in, 3779
surface conductance of, effect of pulsed fields on, 1768
surface phenomena in, review of, 2108
surface potential of, effect of water vapour on, 3097
surface preparation and resistivity measurements on, 1100
surface properties of, 3431
surface reaction on, 3778
surface recombination in, in electric field, 3099
relaxation effects in, 2442
surface recombination velocity in, determination from infrared absorption of, 2109
effects of surface potential and ambient atmosphere on, 2441
photoelectromagnetic method of investigating, 1766
surface states on, rectification characteristics as evidence of, 1767
thermal acceptors introduced during quenching of, 1765
thermal conductivity of, 474
thermally induced acceptors in, 2793
thin films of, crystal structure of, 2459
trap activation energies in, 3432
work function of, temperature variation of, 2795
Ge and Ga, I. spectra of, 3436
Ge and others with diamond structure, characteristics of dendritic plates of, 156
Ge and Si, calculations based on warped energy surfaces for, 1759
chemical interactions among defects in, 3092
crystals, cutting technique for, 1441
dispersal of hydrogen in, 3776
effect of one impurity on solubility of another, 2787
infrared absorption and oxygen content in, 2433
ionization by collision in, 2436
junctions, effect of water vapour on conduction at, 805
electron-voltaic effect produced by β particles in, 2437
minority carrier lifetime in, effect of dislocations on, 2435
optical absorption of, 465
photoconduction in, 772
physics of, 806
pulled single crystals, defects in, 3775
shaping by electrolytic etching of, 2432
surface states in, 2434
Ge-Si alloys, cyclotron resonance in, 1456
experimental investigation of, 812
galvanomagnetic effects and energy surfaces in, 3786
magnetoresistance study of, 1455
Ge-Si and other alloys, preparation by electrolysis of, 3103
grain-boundary effects in, 3086, 3764
graphite, effect of neutron bombardment on, 3424
magnetic susceptibility of, theory of, 1113
photoelectric emission from, 771
review of investigations on, 803
grey tin, Hall-effect measurements on filaments of, 3795
doped with Mn, experimental investigation of, 478
Hall constant of, saturation value of, 801
Hall effect in, measurement of temperature variation of, 3155
and magnetoresistance of, apparatus for measurement of, 3444
high-conductivity, with quasi-metallic properties, theory of, 2094
history of development of, 797
'hot-electron' problem in, 464
impurity scattering in, 2103
impurity traces in, comparison of methods for determination of, 796
impurity-type, activation energy of, theory of, 1749
luminescence and conductivity of, statistical-kinetic theory of, 821
magnetic susceptibility of charge carriers in, 1747
plasma oscillations in, 1681
theory of, 3416
InAs, pressure dependence of electrical properties of, 1771
InAs and InSb, effective electron masses in, 3793
infrared absorption in, theory of, 794
infrared Faraday effect in, 1022
infrared reflectivity of, measurements of, 1077
injected charge carriers in, solution of transport equations for, 1439
InP and GaAs, preparation and properties of, 3107
InSb, carrier mobility in, 3443
effect of pressure on, 161, 162
effect of pressure on Hall coefficient and resistivity of, 3794
effective mass of electrons in, 815
effects at grain boundaries in, 2804
effects of illumination and magnetic field in, 2429
elastic constants of, 2802
electrical properties at low temperatures of, 160
galvanomagnetic effects in, 477
Semiconductors, InSb, high-purity, measurements of conductivity and Hall coefficient of, 1772
infrared absorption in, 814
interpretation of, 2119
lifetime of added carriers in, 1773
low-temperature conductivity of, measurements of, 2803
magnetic resonance in, 1108
magnetic susceptibility of, 163
magnetoresistance anomalies in, 2805, 2806
optical properties at 20–200μ λ, 2118
preparation and determination of carrier masses for, 3108
purification of, 2808
recombination radiation from, 2807
single crystals, patterns observed on melting, 1774
thermoelectric power of, 813
thermomagnetoelectric effects in, 2120
InSb and GaSb, nuclear magnetic resonance in, 1107
intrinsic, degeneracy in, graphical treatment of, 460
ionic, Hall effect in, theory of, 1757
irradiation effects in, survey of, 457
lattice scattering in, theory of, 148
lifetime of excess current carriers in, 2098
metal contacts on, rectification properties of, 157
metal nitrides, production and electrical properties of, 1102
MgO, conductivity induced by electron bombardment in, 158
sign of photo-induced charge carriers in, 2115
Mg_2Sn, properties of, 1104
microminiaturisation for use in research on, 2811
minority-carrier lifetimes in, measurement of, 147
modulated-light-spot method for determining, 1081
mobility of minority carriers injected by light in, experimental determination of, 1082
multi-electron theory of, 3415
negative magnetoresistance effect in, 3413
negative photoeffects in, 1754
Nernst effect in and thermoelectric power of, 3766
NiO, thermomagnetic study of, 2454
NiO and related compounds, relation of magnetic structure to conductivity of, 462
noise in, distribution function of, 818
theory of, 3796
n-p junctions in, I/V characteristic of, 2427, 2775
n-type, lifetime of holes in, 1080
optical transitions at impurity centres in, theory of, 3770
organic, experimental and theoretical investigation of, 1457
with parallel junctions, analysis for transport of carriers in, 1750
PbS, a.f. current noise in, 1109
intrinsic resistivity of, determination from measurements on p-n junctions, 816
PbSe, PbTe and PbS, carrier lifetimes for photon-radiative recombination in, 2121
photomagnetoelectric effect in, 2780
for photovoltaic conversion of solar energy, choice of, 3769
p-i-p structures, negative I/V characteristic of, 2776
p-n junctions in, frequency variation of shot noise in, 2123
influence of growth rate and stirring on, 3765
theory of current flow in, 3087
radiative transitions in, 798
recombination at dislocations in, 461
rectification at n-p junctions in, theory taking account of space-charge region in, 2122
research in, symposium at Ottawa, February 1956, 2778
resistivity of, microwave measurement of, 2158
4-probe apparatus for measurements on, 2476
resistivity and carrier lifetime of, modified Q-meter method for measuring, 3824
resistivity and Hall-coefficient measurements on, 201
scattering of carriers by charged impurities in, 149
Se, absorption edge of, temperature dependence of, 3423
conductivity measurements on, 2782
electron-diffraction study of crystal structure of, 2102

influence of light on absorption of e.m. radiation by, 2431
possibility of combination with halogens, 802
Se and Te, X-ray absorption study of, 1440
secondary-emissive, Ni-Be and Ni-Mg for use in nonlinear resistors, 800
Si, adsorption of NH_3 on, 3426
avalanche breakdown at junctions in, emission of light associated with, 3096
carrier lifetime in, measurements of, 3094
diffusion of donors and acceptors in, 3095
doped, with As, paramagnetic resonance in, 3425
with B, electrical properties of, 1442
with In, optical absorption and photoconduction measurements on, 150
drift mobility of minority carriers in, 2790
edge dislocations in, infrared photographs of, 2438
elastic constants of, X-ray determination of, 152
electron multiplication in, theory of, 3093
impurity levels in, studies of infrared absorption due to, 1086
noise in, effect of illumination on, 1089
n-type, trapping of holes in, 1087
p-n junctions in, luminescence at breakdown voltage in, 1088
p-type, lifetime of electrons in, 1085
radiation resulting from recombination in, 2789
resistivity of, modified 4-probe method for measurement of, 3138
spin resonance of impurity atoms in, 151, 1760
Semiconductors, Si, spiral etch pits in, 2788
surface recombination velocity of, technique for reducing, 2439
use of metal hydrides as fluxes for soldering to, 3818
SiC, energy-band structure of, computations of, 2791
single-crystal, densities in relation to imperfections in, 838
solar-energy converters using, 3538
surface barriers at contacts between, 3410
surface conditions of, theory of, 146
surface conduction in, effect of adsorbed gas on, 1672
surface phenomena in, conference on, 3768
surface potential and charge distribution of, determination from variation of conductance with field, 1078
surface recombination velocity of, determination based on photomagnetoelectric effect, 3088
Te, Nernst-Ettingshausen effect in, 1756
Te-Se liquid solutions, temperature dependence of conductivity of, 3419
thermal characteristics of, measurement of, 1755
thermal conductivity of, 799, 3089, 3090
and thermoelectric power, 3771
thermocouples using, 2430
thermoelectric effect in, effect of transverse magnetic field on, 3772
theory of, based on 'many-valley' energy model, 2423
survey of problems in, 3420
theory of h.f. conductivity in, 3411
TiN and TiC films on SiO_2, 2447
transistor action in, origin of, 1458
transport properties of, kinetic-theory derivation of, 2420
unipolar conduction at boundary with metal, 791
use in thermoelectric cooling devices, 3224
use in thermoelectric generators, 3227
zinc blende and InSb, charge-carrier mobility and piezoelectric properties of, 2116
$ZnAs_2$, preparation and properties of, 2800
ZnO, conductivity at surface of, experimental study of various influences on, 1105
ZnS, adsorption and surface potential of, 3788
ZnTe, electrical properties of, 3439
zone melting, by application of temperature gradient, 1142
conditions for incorporation of volatile impurity elements in, 819
using electron bombardment, 2147
using magnetic field support for, 1775
zone refining, matrix method for determining concentrations in, 820
Servomechanisms, (See also Control systems)
for digital data transmission, 1553
with distributed parameters, stability criteria for, 992
nonlinear, dual-input describing function in analysis of, 3223
frequency-response analysis of, approximate method for, 56
on-off, determination of change-over time for, 3222
for pulsed radar systems, stability and time response of, 269
sampling, application of pulse transfer function to, 267
2-speed, using magnetic amplifiers, 1552
Signal generators, (See also Generators; Oscillators)
a.f., tuning-fork controlled, 863
for colour-television testing, 3834
pulse, using transistors, for testing radar sets, 2496
for radio-receiver testing at frequencies up to 1 kMc/s, 2841
sine-wave, very-low-frequency, using rotating probes in electrolyte cell, 223
for television testing, 1489
3-phase, RC, wide-band, for network testing, 1159
Signals, with limited spectrum, possibility of extrapolation to $t > 0$ for, 2216
with limited spectrum and duration, analysis of, 1206
Skin effect. See Conduction.
Solar activity, coronal, relation to geomagnetic disturbances of, 2042
eruption on 23rd Feb. 1956, effect on atmospherics of, 2715, 2716
effect on radio propagation of, 2717
flares, observations of, accuracy and classification of, 1398
index based on ionospheric measurements to, 1397
prominences, and geomagnetic disturbances, 1399
Solar eclipses, effects on E layer and geomagnetic field, 1716
effect on E_1 layer of, 115
effect on geomagnetic field of, 416
effect on propagation of atmospherics, 1400
intensity of atmospheric radiation at 1 μ and 0·71 μ λ during, 1705
investigation of atmospheric ozone during, 2374
and ionosphere, symposium on, 742
20th June 1955, ionospheric observations in India during, 2514, 2732
25th Feb. 1952, effect on ionosphere of, 3377
interpretation of ionospheric observations during, 1412, 3378
30th June 1954, effect on geomagnetism of, 107
effect on ionosphere at Rome of, 3732
effect on s.w. propagation of, 3858
ionospheric observations in Norway during, 3379
tilts in ionosphere observed at Slough during, 2060
Solar radiation, r.f., at cm λ, dependence on position of active centres, 411
during eclipse, measurements at Byurakan of, 2370
interferometer aerial array at Nançay for investigation of, 3644
at 1 m λ, observations at Cracow during eclipse of 30th June 1954, 3363
at 1·5 mm λ, observations of, 1704
at 3 mm λ, observations of, 740
at 3–4 kMc/s, observations in Japan during eclipse, 2043
at 21 cm λ, distribution over quiet sun, 1706
Solar radiation, r.f. during eclipse, at 60 cm λ, distribution over quiet sun, 1707
at 60 cm and 1·5 mλ observations during eclipse of 30th June 1954, 3719
at 200 Mc/s, elimination of extraneous disturbances in observations of, 741
ultraviolet, investigation of local sources controlling E and F_1 layers, 412
Solar system, magnetic field in vicinity of, effect on particle trajectories of, 737
Soldering, importance of contact angle in, 1479
to Si, use of metal hydrides as fluxes for, 3818
Sound, (See also Absorption; Acoustics; Diffraction; Ultrasonics)
absorbers, membrane-type, measurements on, 2606
attenuation by ear protective devices, measurements using noise band or pure tones, 3618
intensity measurements, anomalous behaviour of Rayleigh disk at high frequencies, 2603
condenser microphone equipment for, 3605
interaction of waves propagated in mutually perpendicular directions in water, 1939
loudness, measurement of, and relation to sound intensity, 654
rating-scale method for comparative measurements of, 1292
re-determination of equal-loudness relations, 3271
of complex tones, significance of 'frequency group' for, 2944
of steady noises, 1604
low-pass filters for protecting the ears, 965
measurements of, design and testing of earmuffs for, 1297
momentum of, theory of, 1272
pressure measurements in water, using capacitance-vibration method, 964
propagation of, in conduits, attenuation resulting from heat conduction in, 1279
in fluids, exact equations for, 1276
in medium with temperature gradient, 308
in ocean, effect of turbulence on, 2931
between parallel plates, theory of, 1601
phenomena in, visual display using schlieren method, 3621
in solid bodies, conference at Göttingen on, 2271
in thin cylindrical shell, 1275
in thin elastic shells, 1274
in tubes, analysis for, 2
in turbulent atmosphere, 307
underwater, continuous tone reverberation in, 643, 644
in upper atmosphere, theory for, 2046, 2721
in water, effect of dissolved air on, 2935
pulses, for acoustic measurements, use of loudspeakers for generating, 3267
finite-amplitude, propagation and reflection of, 2599
propagation of, in dispersive medium, 1931
14·5 kc/s, propagation of, in sea, 1277
radiation of, from plate oscillating in its own plane, 1935
force on obstacle in cylindrical field, 2936
from vibrating wedge, 306
radiators of, $BaTiO_3$, annulus operating in radial mode as, 1937
disks operating in thickness resonance as, 1936
collinear array of cylinders, radiation impedance of, 3
dipole, rotating, analysis for, 3266
directional, analysis of radiation characteristics of, 646
using circular arrays, theory of, 2937
directivity patterns of, computation of, 1933
line, effect of progressive phase variation along, 1280
plane, directivity obtainable with, 1281
relation between amplitude distribution and radiation pattern of, 2600
reflection of, from corrugated surface under water, 1938
from irregular surface, 3602
Fourier-transform method for, 2938
nonspecular, from sinusoidal surface, 5
from periodic surface, variational method for, 2698
from surface of nonuniform impedance, 3601
reflection and transmission of, by moving medium, 1273
reinforcement systems for auditoria, 1605
scattering of, by intersecting beam, frequency components produced by, 2939
by thin plate held in rigid screen, 309
sensitiveness of air and water jets to, 3603
tone wobbling by reflection from rotating target, 3268
transmission of, through walls, loss due to, automatic measurement of, 655
velocity of, in water, temperature coefficient of, 2934
Sound ranging, underwater, survey of, 2742
Sound recorders, battery-operated, Japanese, using transistors, 3204
magnetic, mechanical aspects of, 2260
Sound recording, magnetic, absolute measurements in, 318
reference-level test film for, 2610
for stereophonic reproduction, 1609
visual demonstration of tape magnetization for, 2612
wow and flutter in, measurement of, 13
Sound reproduction, effect of amplifier phase shift on quality of, 1606
equipment exhibited in London, 1956, 2609
from fine-groove records, B.B.C. equipment for, 2279
magnetic, field-strength distribution in head gap, 2611
time regulator for, 2952
needles for, sapphire and diamond, comparison of playing life of, 1610
nonlinear distortion in, threshold of audibility of, 3274
quality in f.m. v.h.f. transmission systems, 3881
stereophonic two-channel systems for, 968, 1946, 2607
Spectrographs, microwave, improvement of sensitivity by increasing klystron power, 1387
using Stark cell, improved design of, 1389
Spectrometers, a.f. using only six filters, 2174
microwave, parallel-plate, 2478
r.f. analysis of response to repeated pulses, 3153
based on 2-cavity klystron, for nuclear-resonance observations, 1696
Spectrometry, mass, applications of electron optics to, 1846
Spectroscopy, in far infrared, interferometer technique for, 3687
microwave, absorption in compressed oxygen, 734
cavity resonator with molecular beam for, 402
cavity resonator with NH_3 beam for, 403, 3710
increase of Q factor by regeneration in, 348
based on coherent radiation from pulse-excited gases, 1037
hyperfine structure of NH_3, observed in 'maser' oscillator, 1693
production of narrow resonance lines using pillbox cavity, 92
report of Geneva conference on radio-frequency physics, 3031
technique and results of, 2156
Zeeman effect in NH_3 inversion spectra, 93
r.f. for study of nuclear magnetic resonance, 1694
Speech, bandwidth compression systems for, 2605
'voiance', 2943
communication by, symposium on, 3608
effect of voicing on relative duration of vowels and consonants, 8
formant frequencies of, automatic electronic devices for determining, 1944
formant information of, bandwidth and channel capacity for transmission of, 3613
intelligibility of, effect of amplitude limiting on, 3614
effect of distortions on, 3607
with phase-reversal switching, 2942
recorded simultaneously at ear and mouth, 1289
intelligibility of Japanese over transmission system, 312
recognition of words in telecommunication practice, 652
synthesis of vowels by resonant circuits, 651
synthetic, experiments on, 9
transmitted by electroacoustic systems, intelligibility of, 313
vowel articulation, tests on 3-number system of specification for, 653
waveform and intelligibility, quantizing circuits for investigating, 1540
Stability, of systems with distributed parameters, analysis for, 992
Stabilization, of low voltages, Ni-Cd cell for, 1220
Stabilizers, mains-voltage, fast-acting, 1870
voltage, a.c., using temperature-limited diode, 2887
direct, for range 0–300 V, 3890
effect of heater-voltage variations on, 576
electronic, design of, 273
series, with compensating networks, 575
using feedback circuit regulated by thermistor bridge, 913
impedance/frequency characteristics of tubes for, 640
using saturated choke, 914
Standard-frequency transmissions, accuracy of, (D)514
GBR, 16 kc/s, measurements in New Zealand on, 1482
monitoring at N.P.L., (D)516
MSF, expressed in terms of Cs resonance, 2839
Rugby equipment for, 515
from WWV and WWVH, improvement of accuracy of, 2838
Standardization, of electronic circuits, N.B.S. work on, 2324
of electronic components, 32
Standards, on letter symbols for semiconductor devices, 56 I.R.E. 28.S1, 3241
for measurement of interference from broadcast and television receivers, 56 I.R.E. 27.S1, 3531
for measurement of pulse quantities, 55 I.R.E. 15.S1, 517
for measurements on a.f. systems, 56 I.R.E. 3.S1, 2475
on symbols in communication engineering, German draft DIN1344, 2270
on symbols for feedback control systems, 55 I.R.E. 26.S1, 571
on terminology, for electronic computers, 56 I.R.E. 8.S1, 3657
for facsimile, 56 I.R.E. 9.S1, 2889
for feedback control systems, 55 I.R.E. 26.S2, 1173
for microwave valves, 56 I.R.E. 7.S1, 1905
for storage tubes, 56 I.R.E. 7.S1, 2264
for t.r. and a.t.r. tubes, 56 I.R.E. 7.S3, 3594
Standing-wave detectors, coaxial-line, correction for eccentricity in, 858
using helix-line element, 1493
for low power levels, at 3·2 cm λ, using directional coupler, 215
microwave, with sliding load, 3489
slotted-section, theory and technique of, 859
Stations, (See also Broadcasting, Television)
for communications, coastal, in Denmark, 3221
s.w., transmitting, British Post Office, Rugby, 569, 2538
German Post Office, Elmshorn, 3535
Storage systems, (See also under Computers)
for pulses, use of nuclear-spin-echo technique for, 1038
Studios. See Acoustics; Broadcasting; Television.
Sun, magnetic field of, 2714
magnetic field surrounding, and cosmic rays, 1699
maps of, cooperative service for regular production of, 2041
Sunspot cycle, correlation with geomagnetic variations of, 2720
decreasing phase 1948–1954, measurements at Rome on, 1047
Sunspots, east-west asymmetry of distribution of, 1396
identification by means of faculae, 101
magnetic field of, dynamo theory of, 1401
relative numbers, constancy of scale of, 3720
Superconductivity, in Sn, observations at mm λ of, 1356
in Sn, In and Tl, paramagnetic effect in, 3446
Superconductors, Al, mm-wave absorption in, experimental investigation of, 2354
electron emission from, experimental investigation of, 3340
microwave absorption in, theory of, 2355
Switches, (See also Circuits, switching)
magnetic, design of in relation to production, 1249
mercury selector, generation of fast-rise pulses by, 3291
microwave, using ferrite rod in cavity, 679
'opto-electronic', using solid-state image intensifiers, 931
t.r., electrode deterioration in 'keep-alive' discharges in, 2252
instability in 'keep-alive' discharges in, 2251
transfluxor multiple-aperture magnetic core, 1637

T

Telecontrol systems, French, on 175 c/s, 1187
radio, of tractor, 1517
weapon control, photoelectric data-coding device for, 1518
Telegraphy, alphabet coding system for, 1544
signalling systems for, 563
Telemetry, demodulator using recording system and f.m./p.f.m. converter, 3178
double-superheterodyne receiver for, 2526
f.m./f.m. system, bandwidth requirements for, 3851
frequency and sampling-rate requirements in relation to interpolation errors, 3506
for missiles, p.p.m. system, using transistor modulator, 3181
rate-of-spin indicator using photocell and transistor oscillator, 3182
6-channel recording system for, 3180
Russian bibliography for 1950–54, 869
survey of electronic data transmission technique for, 2189
transistor oscillator for, 2342
Telephony, articulation calculations for, development of Collard principle of, 3873
Television, (See also Aerials; Interference)
band-I, long-range reception in U.S.S.R., 3523
camera tubes, C.P.S. emitron, 591
photoconductive, for X-ray image intensification, 2864
inertia effects in, 2552
'scenioscope', 1228
storage type, resolution attainable in, 3547
for X-ray images, 1901
cameras, underwater, design of, 1226
variable-magnification systems for, 1598
using vidicons, for film pickup, 280
centre, Sudwestfunk, detailed description of, 2895
closed-circuit multichannel distribution systems, 1874
colour, B.B.C. experimental transmissions, 917
choice of subcarriers for European system, 3542
compatible two-subcarrier system, 1224
c.r. tubes for, effect of magnetic deflection on beam convergence in, 3553
guns producing noncircular spots for, 3593
post-deflection-focus type, 3894
Type-21AXP22, improvements in, 3554
developments in, 1876
European system, frequency of colour subcarrier for, 1877, 1878
flying-spot 'vitascan' scanning system for, 3228
gamma and matrix transmitter correction circuits for, 2232
in Great Britain, line standard for, 2898
kinescopes for, 3-gun, improvement of register in, 1567
N.T.S.C. system, description for nonspecialists, 580
principles of, 2548
transmitter unit for signal matrixing, 588
pedestal processing amplifier for studio operation, 3544
portable signal generator for, 3834
possible European systems in light of U.S.A. experience, 2891
progress in U.S.A., 581
receivers, 'apple' system, 3232, 3893
for British N.T.S.C. system, 1882
chrominance circuits for, 3231
design of, review of U.S.A. practice in, 1881
rejector circuit for sound channel in, 1993, (D)2664
sequential system used at Moscow experimental station, 582, 1560
significance of colorimetry standards revision for, 1558
station installation of, 1231
studio installation, C.B.S., New York, 1232
studio switching equipment for, 2554
subcarrier synchronization in, 3550
survey of systems for, 1559
techniques for film transmission, 3546
trichromatic systems, differential chromaticity thresholds in, 583
in U.S.A., survey made in April 1955, 1875
use of signal harmonics to obtain colour purity in, 3549
conference in Leningrad, 1954, 277
coverage of Gt Britain, 285
use of satellite stations in U.S.A., 2553
delay equalization method for, 2240
detectors, synchronous, for asymmetric-sideband systems, 1566
differentiating equalizer for, 279
distribution of video signals, amplifier for, Chasseral type, 916
of films, with illumination compensation for variation of film density, 589
projection technique for, optical multiplexing in, 3233
Television, of films, projector for use with vidicon tubes, 1225
scanners for, with optical compensation by rotating prism, 1227
in Germany, review of, 278
image formation and analysis in, 'aperture theory' of, 1570
industrial, in open-cast mining, 585
Italian coastal transmission network, 262
links, cable, Broadcasting House–Crystal Palace, 3891
delay equalizers for, design calculations for, 2227
distortion correction in, 577
for outside broadcasts, 2545
video-signal, use of equalized telephone lines in, 275
21-Mc/s network at Hamburg, 3541
radio, in Canada, 2890
dm-λ, Cologne/Frankfurt/Neustadt, 2546
Japanese, using reflex circuit with travelling-wave valves, 1212
u.h.f., Independent Television Authority midlands, 2228

in Netherlands, development of transmission network, **3235**
networks, British I.T.A., **2555**
noise in, visibility of **1234**
outside-broadcast operation, synchronization of various picture sources in, **283**
phase equalization in, **584**
phonevision subscription system, **1223, 2547**
pick-up apparatus, black-level control in, **1880**
picture photography in, circuit producing single-scan picture for, **586**
picture quality in, aperture-compensation methods for improvement of, **1885**
effect of delay distortion in vestigial-sideband system on, **2984**
effect of statistical fluctuations on, **2897**
influence of optical system on, **1233**
influence of optical system on modulation depth, **596**
picture tubes, photoelectric colorimeters for measurements on, **1229**
receivers, aerial filter for use with band-III converter, **2236**
all-standards, with continuously variable tuning, **1563**
band III converter without r.f. stage for, **1564**
circuits and components for 90° scanning, **592**
deflection circuits using multiresonators for, **2893**
design for reduction of fire hazards due to, **3205**
diode circuits for restoring d.c. component in, **1883**
frequency stability of local oscillators in, **593**
line deflection circuit for, self-oscillating, **282**
parasitic radiations from, measurements in Italy on, **2237**
with phase-corrected i.f. amplifier, **594, 2235**
r.f. phase and amplitude characteristics of, **2892**
sampling detector for intercarrier sound, **3551**
synchronizing signal separators using transistors, **1565**
U.S.A. models for 1955–56, trends in, **2234**
vision a.g.c. system for, **281**
4-standard, **3230**
reception, band III, elimination of band I in, **2894**
recording, cinematographic, studio technique for maintaining correct levels in, **2549**
suppressed-trace system used by B.B.C., **918**
using 16-mm film with continuous motion, **919**
using 35-mm film, **1561**
relay system for local distribution of broadcast material, **1210**
scanner, flying-spot type, for epidiascope, **2233**
sound, multiple-pulse time modulation system for, **2214**
in Spain, plans for, **2230**
standard British waveform, modification of, **920**
standards, adopted in Uruguay, **2550**
in different countries of the world, **3543**
stations, B.B.C., Crystal Palace, **2896, 3895**
Copenhagen, short description of, **1569**
low-power, for U.S. armed forces, **1568**
studios, B.B.C., Lime Grove, equipment at and operation of, **284**
equipment at R.T.F., standardization of, **3556**
for equipment testing and personnel training, **1884**
lighting for, **2239**
xenon arc lamps for, **2238**
survey of service in U.S.S.R., **3219**
in Switzerland, description of 4-station service for, **921**
synchronization system using pulse coincidence without special levels, **1222**
synchronizing signals, spectral structure of, **579**
use of, for aerial navigation system, **762**
test equipment for Belgian transmitters, **590**
test patterns for, circuit methods for production of, **2231**
testing technique for use during program, **587**
test-signal generator for, **1489**
transmission, test methods in Germany, **1879**
transmission networks, for Europe, **274**
a.s.w., Austria, **1548**
transmission systems, nonlinearity tolerances for, **595**
wide-band microwave radio links for, **578**
transmitters, video-signal change-over switches for, **2551**
van for outside broadcasts, N.W.D.R., **1230**
video testing based on transient response in, **2474**
Test equipment, (See also individual instruments)
voltage/current characteristic tracer, pulse-operated, **862**
Thermistors, application in instruments for measurement of temperature etc., **3501**
equivalent circuit for very-low-frequency operation, **2315**
impedance at low frequencies of, **678**
oscillations in, analysis for, **696**
stability of, **1977**
Thermistors, subcutaneous temperature measurement by, **3840**
turnover in characteristic of, investigation of, **994**
Thermocouples, using semiconductors, **2430**
Thermodynamics, mathematical study of Boltzmann's equation, **1668**
Thermoelectric effects, Benedicks single-material effect, measurements of, **712**
note on formula for, **713**
cooling, theory and experimental results for, **3224**
in CuO and Cu_2O in powder form, **3111**
in magnetic field, thermodynamic theory of, **1390**
Thermoelectric generators, using semiconductors, **3227**
Thermoelectric properties, of Bi Te alloys, **166**
of Bi_2Te_3, **1083**
of $CrSb_2$, **3773**
of Cu, effect of lattice imperfections on, **1112**
of Sb Te alloys, **2126**
Thermomagnetic effects, in metals in strong fields, **3038**
Time, (See also Clocks)
and frequency, units of, proposed new relation between, **1481**
intervals, marker for, using pulse generator, **864**
mm, time/pulse-height converter for measurement of, **2835**
standards, atomic and astronomical, **2471**
and frequency standards, fundamental requirements for, **3823**
unit of, definition of, **200, 513**
problems involved in, **2834**
physical definition of, problems involved in, **1153**
reconciliation of atomic and astronomical standards, **3469**
Time signals, broadcast from WWV and WWVH, improvement of accuracy of, **2838**
generator for, using frequency divider with decade counter tubes, **1657**
Timebases, with sweep times of 40 mμs–3 μs, using secondary-emission valves, **698**
Training, centre, B.B.C. engineering, outline description of, **3597**
Transactions, Inst. Radio Engrs, Index 1955, **2594**
Transducers, $BaTiO_3$, underwater, radiation impedance of, **4**
calibration of, impedance measurement method for, **3600**
composite crystal and backing plate, friction-controlled, **3599**
electroacoustic, limits of efficiency of, **656**
high-power, variable-frequency, performance of, **2601**
quartz, ultrasonic, efficiency of operation in liquids, **1602**
Transductors, a.c.-controlled, theoretical and experimental investigation of, **2317**
self-saturating, time constant of, **2318**
subminiature, a.f., design of, **1975**
Transformers, a.f., output, design for reduced weight and size, **2643**
for 'ultralinear' amplifiers, design of, **677**
double, geometrical quadripole representation of, **1989**
low-frequency, in amplifier feedback path, treated as minimum-phase-reaction networks, **1659**
miniaturization of, by use of fluorochemical liquids, **1976**
power, l.v., design chart for, **2312**
pulse, using rolled exponential line, **993**
subminiature, a.f., design of, **1975**
wide-band, design data from filter-network theory for, **338**
using tape-wound toroidal cores, **2311**
Transistors, (See also Semiconductors; Valves, crystal)
a.f. pre-amplifier using, **1346**
alloy junction, avalanche type, **293**
base thickness of, etch method for determining, **2902**
effect of gases and water vapour on characteristics of, **2243**
Ge, p-n-p, measurements on, **2903**; using high-emitter-efficiency alloys, **2563**
technique for producing plane junctions in, **2562**
production and properties of, **2242**
surface breakdown of, **2561**
applications of, in d.c. converters, **573**
in Q-multiplier circuits, **1013**
in radiation monitors, **3175**
characteristics of U.S.A. types, **1239**
circuits using, survey of, **1984**
comparison with vacuum-tube valves, **2244**
composite, high α, properties and circuit applications of, **927**
cut-off frequency of, use of neutralisation for improvement of, **1345**
in d.c./a.c. converters, **2884**
design of, in relation to production, **1249**
equivalent circuit of, passive quadripole representation, **928**
representing high-frequency operation of, **2904**
field-effect, design and performance of, **1240**
gain of, network theory of, **1241**
diffused base, **1891**
Ge and Si, surface-barrier, automatic etching in production of, **3242**
generalized admittance and impedance matrices for, **2327**
based on grain-boundary effects, **3086, 3764**
in Japanese equipment, **3204**
junction, with $\alpha > 1$, operating characteristics of, **1893**
with auxiliary collector for switching purposes, **3244**
current amplification factor of, variation with emitter current of, **294**
effect of X rays on operation of, **1245**
equivalent circuit of, **607**
h.f. power gain of, **3566**
influence of base-layer impurity distribution on, **1244**
measurement of h parameters of, **1483**
noise in, measurements at 7–50 kc/s of, **606**
operation and electronic theory of, **924**
'punch-through' voltage of, temperature variation of, **925**
quadripole behaviour of, and valves, **2001**
Transistors, junction, shot noise in, **600**
temperature coefficient of, **295**
test equipment for, **526**
use in power amplifiers, **366**
4-terminal network parameters of, **3563**
letter symbols for, standard 56 I.R.E. 28.S1 on, **3241**
microphony caused by vibrations of leads of, **3246**
multistable circuits using, **37**
noise in, **616, 1894**
p-n-n^+ junction, high-gain, production and properties of, **3565**
p-n-p junction, noise in, **1246**
propagation of charge pulse in, **3243**
point-contact, aging in, use of Li-doped collectors for observing, **1242**
effect of drift field on cut-off frequency of, **1577**
negative-resistance regions in characteristics of, **1243**
production of, experiments in Japan on, **3564**
'step' and 'oscillation' phenomena associated with breakdown in, **603**
power, self-bias cut-off effect in, **604**
semiconductor physics of, **1458**
Si, diffused junction, **1890**
fusion, developments in, **926**
low-power operation of, **3898**
n-p-n, current amplification factor of, improvement by surface treatment, **2439**
p-n-p-n, manufacture and switching applications of, **3899**
survey of characteristics and production of, **602**
tetrode-type, experimental, for 1 kMc/s, rate-grown Ge crystals for, **467**
transfer characteristics for transients in, **1892**
Transmission lines, (See also Cables; Waveguides)
a.f., for programs, long-distance, German tests on, **14**
coaxial, elliptic, theory of, **3631**
inductance of, calculation of, **2953**
pulse-handling devices based on, **60**
T stubs for v.h.f. filters, calculation of, **1332**
with continuous nonuniformities, synthesis of quadripoles from, **2990**
effects of longitudinal voltage and current on, **2614**
exponential, tapered strip, for pulse transformer, rolled construction of, **993**
helical, coupled, analysis of, **1612**
dispersion in, **2284**
theory of, **3276**
reflection at changes of pitch in, **322, 662**
theory of, **2954**
helical strip in waveguide, theory of propagation on, **2955**
impedance transformations for, logarithmic chart for, **1613**
matching sections for, optimum taper for, **1953, (D)3278**
microwave, bibliography of advances in 1954, **1952**
laminated, theory of, **2613**
nonreciprocal, application of electron plasma and other media in, **663**
strip, electrolytic tank investigation of, **2283**
production and applications of, **975**
symposium on, **1611**
nonuniform, bibliography of, **2617**
as impedance transformers, **664, 1614, 3277**
with step transitions, use of Tchebycheff polynomials in calculations for, **3630**
surface-wave, launching systems for, **974**
measurements at 3·2 cm λ on, **16**
parallel, exchange of energy between, **2615**
radiation caused by diffraction by discontinuities on, **2616**
rectangular-channel type, **2956**
tapered, Dolph-Tchebycheff, design of, **976**
uniform, propagation of transients on, analysis for, **3632**
Transmitter-receivers, portable, R/T for 80- and 100-Mc/s bands, design and applications of, **1550**
v.h.f. unit for, **1214**
Transmitters, (See also Stations; Television)
a.m., h.f. filter design eliminating pn-m in, **922**
method of deriving overall negative feedback in, **2556**
broadcasting, unattended, review of techniques for, **1573**
communication, automatic tuning system for, **3238**
h.f., filter for eliminating harmonics in television band I in, **47**
high-power, valve protection circuits using gas-filled valves for, **1235**
spurious emissions from, measurement of, by directional-coupler method, **1811**
15 kW 2-stage amplifier for, **3559**
Troposphere, (See also Atmosphere; Wave propagation, e.m.)
r.f.-refractive-index chart for, determination from meteorological data, **2517**

U

Ultrasonics, absorption of. See Absorption.
applications of, in industry, **1882**
to measurement of elastic constants, **2177**
to treatment of tumours, **2179**
attenuation in water, measurements of, **1929**
distortion of liquid surface due to, **1278**
generated by destructive in liquids, **310**
generators, effect of surrounding liquid on useful output of, **311**
in geophysical prospecting, theory of, **1501**
interferometer for measurement of velocity and absorption in liquids, **226**
Ultrasonics, irradiation of nervous system by, investigation of effects of, **2178**
machining of brittle materials by, **1170**
measurements, of elastic constants by, **867**
using electron-acoustic image converter, **2184**
mechanical pressure exerted by and absorption of, **1940**
optical refraction for investigation of, **1941**
photographic method for rendering waves visible, **963, 2273**
propagation, in shallow water sediments, **1930**
in suspensions, experimental investigation of, **2274**
radiation pressure in, theory and measurement of, **648**
transmission of, control by $BaTiO_3$ shutter, **645**
velocity of propagation of, in fused quartz and armco, **1131**
interferometer for measurement of, **1285**
in organic liquids, temperature variation of, measurement of, **6**
vibrations of Si rods at 10·25 Mc/s, **2933**
Units, electrical and magnetic, proposed 'système paritaire' for, **1354**
Giorgi system, and rationalization of electricity equations, **3327**
logarithmic, 'lot', for general use in science and engineering, **1665**

V

Vacuum gauges, based on gas discharge in magnetic field, **848**
cold-cathode, Penning-type, c.r.o. method for optimum adjustment of, **440**
extended-range, **3073**
ionization type, determination of pressure by, **3391**
with stabilized power supply, **2750**
Vacuum pumps, diffusion-type, using freon 12, **3393**
ion type, with cold electrodes, characteristics of, **3748**
molecular, rotary, experimental study of, **2752**
theory of, **3075**
vapour-type, ultimate vacuum obtainable in, **3074**
Vacuum technique, analysis of gases at low pressure, **2078**
gettering, rates for rare gases, use of krypton-85 in measuring, **1733**
use of Ti for, **1428**
ionization method, experimental investigation of, **2751**
leak testing, optical method based on emission spectra for, **766**
outgassing of glass, **767**
technology and applications of mercury in, **3392**
Valves, (See also Cathode-ray tubes; Electron beams; Rectifiers; Transistors)
acceptance inspection of, sampling methods used by French Post Office for, **2253**
amplifier, quadripole behaviour of, and transistors, **2001**
analysis for space-charge-limited current between nonsymmetrical electrodes, **303**
cooling arrangements for, **3290**
crystal-diode, alloyed Ge-In junction, capacitance measurements on, **1575**
double-base, theory of, **3562**
Ge, diffused-junction, manufacture of, **1237**
effect of illumination on noise in, **290**
flicker noise in, **1576**
point-contact, forward characteristics of, **291**, turnover in reverse characteristic of, **994**, voltage-controlled attenuator using, **50**
Russian types, **3239**
spectrum of excess noise in, **2558**
inductive component in impedance of, **599**
influence of frequency on rectifying properties of, **1889**
junction-type, shot noise in, **600**
use as variable capacitance at u.h.f., **2559**
PbS, experimental investigation of rectification in, **2560**
p-n junction, generating h.f. oscillations, **1888**
p-n junction, frequency-converter applications of, **3897**
pulse methods for investigation of, **1236**
speed of response of, **1574**
point-contact, thermal effects in, **292**
p-n junction, influence of resistivity on blocking properties of, **2901**
Si, junction-type Zener-voltage breakdown in, **923**
microwave, noise in, **(D)601**
current rise in response to pulse voltage in, **3571**
design of in relation to production, **1249**
diode, coaxial, electron trajectories at 3 kMc/s in, **948**
gas-filled, as computer storage elements, **1972**
saturated, for voltage stabilizers, **(D)1596**
space-charge-limited, characteristics of, effect of cathode work function on, **1917**
noise temperature of, **947**
electron-multiplier, statistical study of multiplication in, **296**
electron-wave, theory of, **2258, 2702**
two-beam, effect of electron-velocity distribution in, **1250**
envelope potential build-up in, **2588**
focused-beam, noise due to positive ions and secondary electrons in, **1256**
gas-filled, corona discharge, continuously controllable, **2927**
diode, method for obtaining uniform characteristics in, **1264**
electron-multiplier, **1922**
hot-cathode, initiation of discharge in, **951**
for switching purposes, firing time of, **953**
as t.r. and a.t.r. switches, standard 56 I.R.E. 7.S3 on definitions for, **3594**
triode, amplifier action of, **954**
experimental investigation of types of discharge in, **2925**
triode-matrix, as binary adder, **3261**
triodes and tetrodes, current rise time in, **639**
sensitivity and delay time of, **1921**
Valves, gas liberated in, origin and elimination of, **2906**
glow-discharge, for microwave control purposes, **1599**
voltage-regulator, in d.c. coupling circuits, **692**
impedance/frequency characteristics of, **640, 1920**
running voltage/current characteristics of, **952**
running voltage/temperature characteristics of, **1263**
grid-cathode spacing in, optical method for determining, **2569**
grid current in, analysis for, **2908**
grid emission in, gold-plating techniques for inhibiting, **632**
heptode, using 1 mm grids, characteristics and applications of, **3262**
klystron, advantitious a.m. in, analysis using Schlömilch series of Bessel functions for, **1592**
amplifier, high-power, demountable, for X band, design and performance of, **944**
frequency multiplier, design and performance of, **2915**
for medium-power c.w. operation, **1588**
reflex, oscillator, Type VX5023, **2579**
recent types of, **3574**
wide-range tuning of, in relation to a.f.c. problems, **3068**
transverse current distribution in beam of, X-ray method for studying, **941**
2-beam, as frequency multiplier, **1255**
magnetron, characteristics of, advance calculation of, **2910**
c.w., 8-mm-λ, noise investigations with cantilever cathode, **1595**
effects due to dense space charge in, **2575**
incidental production of X rays by, **943**
interdigital line anode structure for, **1909**
measurement of cavity Q factor of, **2493**
mining-pulse tester for, **3498**
mm-λ, Type VX5027, **2580**
multigenerator, theory based on cascade bunching for, **2577**
space charge distribution in cut-off state, **1584**
split-anode, self-sustained electronic spokes in, **1587**
theory of, **939**
discussion on, **(D)1586**
theory of pre-oscillation state in, **938**
variation of cathode surface temperature during operation, **3258**
whole-anode, in cut-off state, plasma oscillations in, **1903**
microwave, bibliography of advances in 1954, **1952**
focused-beam, permanent magnets for, **1254**
long-beam, analysis of noise in, **1593**
interception noise in, **1594**
minimum noise figure of, computation of, **3257**
plasma frequency reduction factors due to drift tube in, **3573**
theory of, **619**
standard 56 I.R.E. 7.S1 on definitions of terms for, **1905**
noise in, **616**
pentagrid, converter, characteristics and application of, **3590**
pentode, current partition in, calculation of, **3589**
power-type, method of determining characteristics of, **3237**
use of transistor as anode load for, **3008**
rating of, in abnormal ambient conditions, **937**

reliability of, design and maintenance aspects of, **3247**
reliable, French manufacturing and inspection techniques for, **3572**
for government and industrial purposes, **(D)617**
Russian terms for, **1247**
secondary-emission, flicker noise in, **3587**
properties and applications of, **2919**
shot noise in, theory of, **1581**
use of correlation tensor in, **1582**
stability of, influence of space-charge standing waves in, **1913**
switching, travelling-glow discharge, **1265**
testing of, at Laboratoire Central des Industries Electriques, **2840**
tetrode, u.h.f., beam power Type 6448, **635**
thyratron, with controlled firing time, for d.c./a.c. inversion, **1556**
current ratings of, dependence on firing angle of, **2265**
grid-control circuit for, **2223**
hydrogen-filled, experimental investigation of, **2926**
reduction of threshold striking voltage of, **2341**
transmitting, life of, factors affecting, **936**
travelling-wave, applications of, **2257**
backward-wave, amplifier, cascade-type, **624**
M-type carcinotron, theory of, **3255**
O-type carcinotrons, development of, **1904, 3576**
beam focusing by periodic magnetic fields in, **621**
with coupled helices, **1253**
analysis for, **1612**
with crossed electric and magnetic fields, analysis of modes in, **1585**
delay lines with periodic structure for, theory of, **1907**
design for amplification at high power levels, **1589, 2911**
E and C type, limitations of, **1590**
external-helix, conditions for oscillations in, **1591**
French Post Office types, development of, **3575**
with helical line, dispersion in, **2284**
high-power, design of, **2570**
interdigital lines for, effect of radiation from, **1908**
Japanese types for 4-kMc/s band, **2576**
large-signal operation of, analysis for, **3577**
theory of, **2571**
with light-weight permanent-magnet focusing, **1251**
with magnetically-focused beam, space-charge-wave propagation in, analysis for, **3254**
noise figure of, **622, 3579**
nonlinear phenomena in interaction between beam and field in, **2914**
Valves, travelling wave, oscillator, with magnetic field, 'carmatron', **620**
periodic-magnetic focusing, use as microwave detectors, **2259**
periodic structures with transverse wires for, analysis for, **942**
phase distortion in, **2573**
survey of developments in, **2572**
transverse-beam, experimental results for, **3253**
theory of, **3252**
transverse-field, with periodic e.s. focusing, **1252**
2-helix, high-power, **2574**
for 3-2 cm λ, noise measurements on, **3578**
travelling-wave and 2-beam, graphical method for investigating, **2256**
triode, electron optics of, **634**
generalized admittance and impedance matrices for, **2327**
h.v. low-current types for special applications, **2261**
transmitting, Type RS526, 120-kW, **3588**
u.h.f., lighthouse-type, double-ended arrangement for, **2589**
u.h.f., with velocity-modulated beams, space-charge effects in, **2909**
utilization conditions on French long-distance lines, analysis of, **2254**
vacuum-tube, comparison with transistors, **2244**
Vibrations, of circular and elliptical plates, frequency equations for, **2272**
of diaphragm between parallel electrodes, **1270**
forced, of rigid circular plate, **1928**
of molecules and membranes, theory of, **2597**
of plates, analysis for, **962**
of rectangular plate with distributed added mass, **2930**
of shallow spherical shells, analysis for, **1271**
of strings, simple analysis for, **2929**
transient, excited by bow, **3270**
of systems with elliptic boundaries, analysis for, **961**
of triangular membranes, analysis for, **2598**
Voltage, alternating, low, measurement of, by compensation method, **1487**
direct, low, measurement of, at low temperature using superconducting modulator, **518**
divider, with nonlinear element, **2490**
microwave measurement of quadrature components of, **2169**
peak, measurement of, diode circuits for, **1883**
ratio measurements using divider with dry rectifier, **203**
Voltmeters. See Meters.

W

Wattmeters. See Meters.
Wave propagation, acoustic. See Sound; Ultrasonics.
acoustic and e.m., reflection from irregular surfaces, Fourier-transform method for, **2938**
in stratified media, analysis for, **730**
focusing effects in, **729**
equation of, asymptotic expansions of solutions, of, **398**
magnetohydrodynamic, theory of 4 modes in, **733**
mathematical theory of, **2151**
reflection from periodic surface, **2698**
scattering cross-section of obstacle, **401**
Wave propagation, e.m., (See also Diffraction; Reception; Scattering; Television; Transmission Lines; Waveguides; Waves)
atmospheric study of, **1196**
across boundaries, for flat earth, **541, 1848**
for spherical earth, **2191**
cm-λ, back-scattering from mixture of ice and air, **899**
self-interaction in plasma in magnetic field, **1691**
in conducting media, frequency dependence of, **2868**
determination of velocity of, **3515**
from dipoles near ground, analysis of transient fields in, **1851**
in dispersive medium, acoustic-analogy investigation of, **2365**
at double grids, **2696**
fading, in inhomogeneous atmosphere, **2869**
ultrasonic simulator for, **3191**
Faraday effect in plasma at 10 kMc/s, **732**
by forward scatter, survey of work at N.B.S. on, **2193**
ground-wave, assessment of field-strength calculation methods for, **891**
attenuation and phase constant of, **544**
in gyromagnetic medium, theory of, **2031**
in inhomogeneous atmosphere, analysis for, **545**
interaction experiments in He plasma, **1383, 3351**
ionospheric, absorption variations measured at different stations, **1051**
analysis for, **3510**
arrival-angle measurements for, **1200**
in Japan, **549**
aspect-sensitive back-scatter at middle latitudes, **1527**
by back-scatter, D.S.I.R. sounder for study of, **3197**
from ground, **1854**
observations with telegraphy signals, **896**
from sea surface, **1199**
bibliography on, **1195**
with critical or near-critical coupling, analysis for, **1192**
direction of arrival in, automatic recording of, **543**
directional fluctuations in, **2515**
divergence factor due to curvature of ionosphere surface, **1849**
effect of ionospheric storms on, North-Atlantic-circuit study of, **1193**
effect of solar eclipse on, **3858**
effect of solar eruption on, **2717**
Wave propagation, e.m., ionospheric, E layer, influence of Q.L.-Q.T. separation level on reflections from, **893, 3188**
estimate of antipodal area in, **3859**
fading in, of coupling echo, **2520**
experiments on, **2519**
height of production of, **1522**
due to irregularities, **1415**
in relation to ionosphere surface curvature, **900**
spaced-receiver measurements on, **3200**
field-strength forecasts and D-E layer model, **2194**
focusing effects and image zones in, **3512**
focusing effect of ripples on, **2872**
forecasts for, using control-line method, **235**
of m.u.f.s, **3196**
significance of sunspots for, **2202**
sources of error in, **3854**
in India, analysis of field-strength measurements, **1852**
interaction in, **1521, 2197, 2198**
of ordinary and extraordinary waves, **2196**
self-demodulation and other nonlinear effects in, **3856**
long-range, accuracy of m.u.f. determination for, **1523, 1524**
fluctuations of direction of arrival of, **1201**
lower limiting frequency for, **3514**
magneto-ionic triple splitting over Delhi, **895**
measurements of propagation time between Italy and U.S.A., **1190**
via meteoric E layer, **2871**
observations, at Banaras during solar eclipse 20th June 1955, **2514**
of lateral deviation in Japan, **3508**
of multiple F_2-layer reflections, **894**
reciprocity tests, **1856, 1857**
by scatter, **234**
in lower ionosphere, at low v.h.f. and high h.f., **245**
selective fading due to travelling ionospheric ripples, **3863**
technique of investigation, based on form of time-signal pulses, **1853**
by ground back-scatter, **1855**
u.s.w., review of, **3519**
vertical-incidence, effect of polarization orientation on, **3511**
vertical-polarization variations in, **1526**
Z propagation 'hole' for, **2195**
by ionospheric or meteor-trail scattering, influence of aerial pattern in, **1198**
by ionospheric or tropospheric scattering, statistical theory of, **3853**
l.f., deviation at coast-line in, **3195**
over land/water paths, field-strength measurements for, **542**
long-range, path followed by, **3193**
phase changes with distance in, equipment for measurement of, **3857**
phase variations in crossing coast-line, **3194**
long-wave, in guide formed by earth and ionosphere, **22**
ionospheric analysis for oblique geomagnetic field, **546**
long-range, ionospheric, **1529**
Maxwell's equations for, method of integrating, **2697**
m.f., fading in, **249**
via meteor ionization trails, **3509**
microwave, absorbing materials for, **1470**
amplification in He negative glow, **715**
through artificial dielectrics, **1385**
fading in, due to atmospheric fronts, **2207**
due to ducts, statistical treatment of, **2206**
through inhomogeneous media, **1035**
in oceanic duct, prediction from meteorological data for, **2876**
on overwater paths, effect of water-level fluctuations on, **1530**
over sea, duct type, Japanese observations of, **3861**
transmission by pairs of gratings, **1376**
mm-λ, atmospheric absorption in, **3862**
perturbation of field by irregularities of boundary, **87**
over radio links, review of, **2199**
reflection, from electron-ion clouds, **1191**
from stratified ionized gas, analysis for, **1189**
by scattering, from ionosphere and troposphere, **233**
ratio of steady signal to noise in, **2513**
scattering, by ionized gas column, **2693**
by irregular medium, **2192**
in turbulent ionized media, **1373**
shielding effect of conductive coatings in, **1520**
signal strength variations in, automatic apparatus for statistical study of, **2166**
over spherical earth, calculations taking account of diffraction in, **3186**
statistical effect of random variables in, **197**
over stratified earth, analysis for, **3190**
tensor scattering matrix for field in, **1690**
of transients over curved earth, **1959**
tropospheric, beyond-horizon, analysis based on absence of turbulence for, **240**
use of 'angular distance' in investigation of, **242**
influence of refractive-index gradient on, **241**
investigations of fading in, **250**
investigation of field strength beyond horizon, **1858**
night-time, effect of inversions on, **3198**
reflection at inhomogeneities in, **3518**
by scatter, **234**
effect of anisotropy of turbulence on, **239**
experimental investigation of, **237**
scatter mechanism and transmission loss in, **2870**
Wave propagation, e.m., tropospheric, superrefraction effects on radio link, **2200**
u.h.f., diversity tests of signal-strength for, **2210**
dm-λ, over distances up to 250 km, tests of, **1197**
effect of mountainous path in, **898**
influence of atmospheric turbulence on, **2203**
practical requirements for beyond-horizon ranges, **248**
tests made in Italy, **3522**
u.h.f. and microwave, by tropospheric scattering, experimental investigation of, **238**
u.s.w., beyond-horizon, simple diffraction theory for, **2875**
extended-range, Marconi's experiments on, **3517**
survey of, **3860**
validity of scattering calculations assuming perfect conductivity, **90**
very-long-wave, influence of earth's magnetic field on, **232, 3060**
v.h.f., abnormal, and refractive index in troposphere, **2517**
abnormal reception due to abnormally dry air, **247**
by aurora and E_s layer, **1533**
aureal effects on, **429**
auroral reflection in, **428, 2739**
correlation between field strength and structure of atmosphere, **897**
correlation with meteorological conditions, **3199**
coverage of TV and f.m. stations, Danish investigations of, **1532**
diffraction by mountains in, **1859, 3520**
extended-range, as cause of interference, **550**
observations and mechanism of, **2516**
role of meteors in, **236**
fading in, equipment for autocorrelation analysis of, **854**
by ionospheric scatter, height of scattering layer in, **3521**
investigations in Europe of, **1860**
in lower ionosphere, **243, 244**
long-range reception in U.S.S.R., **3523**
trans-horizon reliability for communication systems, **2532**
variation of transmission loss with distance and aerial height, **1531**
v.l.f., ground-wave, curves for, **3516**
long-distance, detailed investigation of, **3192**
round earth, **231**
Waveguides, (See also Transmission lines)
anisotropic, analysis for propagation in, **2287**
asymmetrical junctions in, equivalent circuits of, **2290**
circular, angular momentum of field in, **18**
with coaxial-line input and output, analysis for, **2292**
ferrite-loaded, energy-concentration effects in, **1615**
with finite wall conductivity, propagation near cut-off in, **2619**
with radial-line cavities, as microwave filter, **1330**
with complex helical structure, modes obtainable with, **3279**
couplings from rectangular to circular types, **2957**
curved, analysis based on straight-section approximation for, **3633**
with spaced longitudinal diaphragms, analysis for, **3280**
dielectric-disk-loaded, as anisotropic media, **979**
dielectric matching sections for, **666**
dielectric-tube, theory of, **21**
effect of deformations on propagation in, **665**
with electron beams, nonlinear phenomena in interaction between beam and field in, **2914**
containing ferrites, mathematical theory of propagation in, **1956**
properties and applications of, **3666**
temperature dependence of properties of, **2291**
theory of, **20**
Waveguides, containing ferrites, for 0·87 and 1·9 cm λ, **1957**
ferromagnetic, attenuation and permeability of, **2288**
containing gyromagnetic medium, Faraday effect in, **2618**
propagation of circularly polarized waves in, **2289**
with imperfectly conducting walls, analysis for, **3634**
iris-loaded, terminated, circularly symmetric TM waves in, **19**
resonance frequencies and field configurations in, **1302**
junctions for, admittance of, **2286**
annular rotary type, **1954**
with coaxial lines, design for wide frequency band, **661**
λ/4 matching sections for, **2293**
with longitudinal diaphragms at regular spacings, analysis for propagation in, **978**
containing magnetized ferrites, theory of, and devices based on, **2958**
microwave filters using, design of, **1645**
containing periodic structures, analysis involving paired systems of algebraic equations for, **1955**
lossy, analysis for, **2285**
radial, theory of, **22**
rectangular, with asymmetrical diaphragms, analysis for, **1301**
with ferrite plate, calculations for propagation in, **323**
containing ferrite slabs, modes of propagation in, **325**
as nonreciprocal attenuators, **3675**
nonreciprocal phase shifts in, **2959**
theory of propagation in, **324**
spurious modes in, transmission loss due to, **3635**
step-by-step method for design of, **17**
testing of, with μs pulses, **1808**
transients in, analysis for, **1300**
transmission of pulses in, analysis for, **344**
Wavemeters, (See also Frequency, meters)
microwave, based on interference between reflected waves, **3495**
sliding-rod type developed at Physikalisch-Technische Bundesanstalt, for 180 Mc/s–80 kMc/s, **2494**
Waves, (See also Diffraction; Sound; Transmission lines, surface-wave; Ultrasonics)
cm-λ, e.m. and acoustic, survey of absorption devices for, **3037**
in electron beams, conditions for propagation of, **1906**
e.m., elliptically polarized, errors in measurements of, **2836**
total reflection of, **1375**
interaction with 'Čerenkov electron gas' of, **3035**
in ionized medium with magnetic field, analysis of possible modes in, **2030**
surface, over dielectric-coated conducting plane, excitation of, **(D)320**
launched from vertical dipole over reactive-surface disk, **2282**
hydromagnetic, in ionized gas, **91**
magnetohydrodynamic, shock, in plasma, structure of, **2701**
space-charge, mechanism of growth of, **2258, 2702**
statistical properties of, **3326**
Work function. See Electron emission.

X

X-ray camera, for crystal examination, **840**
X-ray tubes, electron optics of, **3847**
X rays, effect on operation of junction transistors of, **1245**
image intensifiers for, **2510, 3174**
photoconductive pickup tubes as, **2864**
television camera tube producing images by, **1901**

ERRATA

IN 'ABSTRACTS AND REFERENCES', 1956

Abstract No. 440	Add B. Vodicki as co-author
Abstract No. 1805	Change U.D.C. number 621.3 to 621.317.3
Abstract No. 2472	Change U.D.C. number 621.3.001.3 to 621.3.011.3

IN PAPERS ABSTRACTED

During 1956 the practice of allocating individual abstract numbers to corrections was largely discontinued; a list of published corrections noted during the year is given below. The journal in which the correction appeared was in each case the same as that in which the original paper was published.

Abstract No.	*Correction publication reference*
2941 of 1953	Oct. 1956, Vol. 44, No. 10, p. 1468
1336 of 1954	Sept. 1955, Vol. 32, No. 3, p. 178
728 of 1955	Nov. 1955, Vol. 10, No. 11, p. 1027
2283 of 1955	Jan. 1955, Vol. 2, No. 7, p. 3 of cover
3119 of 1955	Dec. 1955, Vol. 26, No. 12, p. 1523
3208 of 1955	Nov. 1955, Vol. 43, No. 11, p. 1579
3235 of 1955	July 1956, Vol. 11, No. 7, p. 806
3658 of 1955	Nov. 1955, Vol. 26, No. 11, p. 1389
303 of 1956	Dec. 1955, Vol. 26, No. 12, pp. 1522–1523
306 of 1956	April-June 1956, Vol. 2, No. 2, p. 231
425 of 1956	March 1956, Vol. 10, No. 1, p. 17
490 of 1956	Nov. 1955, Vol. 9, No. 11, p. 395
491 of 1956	Dec. 1955, Vol. 26, No. 12, p. 1523
1007 of 1956	Aug. 1956, Vol. 28, No. 342, p. 359
1014 of 1956	Aug. 1956, Vol. 44, No. 8, p. 1047
1038 of 1956	Feb. 1956, Vol. 27, No. 2, p. 196
1929 of 1956	April-June 1956, Vol. 2, No. 2, p. 231
1953 of 1956	Dec. 1956, Vol. 44, No. 12, p. 1753
2086 of 1956	April-June 1956, Vol. 2, No. 2, p. 231
2123 of 1956	Nov. 1956, Vol. 44, No. 11, p. 1541
2298 of 1956	July 1956, Vol. 44, No. 7, p. 926
2475 of 1956	Dec. 1956, Vol. 44, No. 12, p. 1765
2759 of 1956	Dec. 1955, Vol. 10a, No. 12, p. 1038
2946 of 1956	1956, Vol. 6, No. 3, p. 324
2987 of 1956	Sept. 1956, Vol. 28, No. 343, p. 407
3030 of 1956	Aug. 1956, Vol. 27, No. 8, p. 652
3843 of 1956	Oct. 1956, Vol. 16, No. 10, p. 532

LISTS OF JOURNALS

A selection of the journals which are regularly scanned is given below, together with the addresses of their publishers or editorial offices and the abbreviations of their titles as used in the Abstracts and References. Applications for copies of any journal should be made to the addresses given.

The full title of each journal is given in bold type and is followed by the address, the abbreviated title being shown within brackets. In a few cases the nature of a journal is indicated, where neither the title nor the address shows it clearly.

A

Acta physica austriaca, Springer Verlag, Wien I, Molkerbastei 5, Austria. (*Acta phys. austriaca*)
Acta Polytechnica, Royal Swedish Academy of Engineering Sciences, Stockholm, Sweden. (*Acta polyt., Stockholm*)
Acustica, S. Hirzel Verlag, Stauffacherquai 40, Zürich 1, Switzerland. (*Acustica*)
Advances in Physics, Taylor & Francis Ltd, Red Lion Court, Fleet Street, London, E.C.4, England. (*Advances Phys.*)
Akusticheski Zhurnal, Moscow B-64, Pudsonskii per., 21, U.S.S.R. (*Akust. Zh.*)
Akustische Beihefte, S. Hirzel Verlag, Stauffacherquai 40, Zürich 1, Switzerland. (*Akust. Beihefte*)
Alta Frequenza, Associazione Elettrotecnica Italiana, Milano (202), Via S. Paolo 10, Italy. (*Alta Frequenza*)
Annalen der Physik, J. A. Barth, Leipzig C 1, Salomonstrasse 18B, Germany. (*Ann. Phys., Lpz.*)
Annales de Géophysique, Service des Publications du C.N.R.S., 13 quai Anatole France, Paris 7e, France. (*Ann. Géophys.*)
Annales de Physique, Masson & Cie, 120 Boulevard Saint-Germain, Paris 6e, France. (*Ann. Phys., Paris*)
Annales de Radioélectricité, 10 rue Carducci, Paris 19e, France. (*Ann. Radioélect.*)
Annales des Télécommunications, 3 & 5 Boulevard Pasteur, Paris 15e, France. (*Ann. Télécommun.*)
Annali di Geofisica, Istituto Nazionale di Geofisica, Città universitaria, Roma, Italy. (*Ann. Geofis.*)
Applied Scientific Research, Martinus Nijhoff, Lange Voorhout 9, The Hague, Netherlands. (*Appl. sci. Res.*)
Archiv der elektrischen Übertragung, S. Hirzel Verlag, Stuttgart, Germany. (*Arch. elekt. Übertragung*)
Archiv für Elektrotechnik, Springer Verlag, Berlin W35, Reichspietschufer 20, Germany. (*Arch. Elektrotech.*)
Archiv für Meteorologie Geophysik und Bioklimatologie, Series A, Springer Verlag, Wien 1, Molkerbastei 5, Austria. (*Arch. Met., Wien*)
Archiv für technisches Messen, R. Oldenbourg KG, München 8, Rosenheimer Str. 145, Germany. (*Arch. tech. Messen*)
Archiwum Elektrotechniki, Warszawa, ul. Koszykowa 75, Polytechnika, Zakład Elektroniki PAN, Poland. (*Archiwum Elektrotech.*)
Arkiv för Fysik, published for Royal Swedish Academy of Sciences by Almqvist & Wiksells Boktryckeri A. B., Stockholm, Sweden. (*Ark. Fys.*)
A.T.E. Journal, Automatic Telephone & Electric Co., Strowger Works, Liverpool 7, England. (*A.T.E. J.*)
Audio, 204 Front Street, Mineola, N.Y., U.S.A. (*Audio*)
Australian Journal of Applied Science, Commonwealth Scientific and Industrial Research Organization, 314 Albert Street, East Melbourne C.2, Victoria, Australia. (*Aust. J. appl. Sci.*)
Australian Journal of Physics, as for Australian Journal of Applied Science. (*Aust. J. Phys.*)
Avtomatika i Telemekhanika, Moscow, Leningradskoe shosse, 9, U.S.S.R. (*Avtomatika i Telemekhanika*)
A.W.A. Technical Review, Amalgamated Wireless (Australasia) Ltd, Sydney, Australia. (*A.W.A. tech. Rev.*)

B

B.B.C. Engineering Division Monographs, British Broadcasting Corporation, 35 Marylebone High Street, London, W.1, England. (*B.B.C. Engng Div. Monographs*)
Beama Journal, British Electrical and Allied Manufacturers' Association, 36 Kingsway, London, W.C.2, England. (*Beama J.*)
Bell Laboratories Record, 463 West Street, New York 14, N.Y., U.S.A. (*Bell Lab. Rec.*)
Bell System Technical Journal, American Telephone and Telegraph Company, 195 Broadway, New York 7, N.Y., U.S.A. (*Bell Syst. tech. J.*)
British Communications & Electronics, Heywood & Co. Ltd, Drury House, Russell Street, Drury Lane, London, W.C.2, England. (*Brit. Commun. Electronics*)
British Journal of Applied Physics, 47 Belgrave Square, London, S.W.1, England. (*Brit. J. appl. Phys.*)
Brown Boveri Review, Baden, Switzerland. (*Brown Boveri Rev.*)
Bulletin de l'Académie des Sciences de l'U.R.S.S. (*série physique, (b) série géophysique, (c) classe sciences techniques* (in Russian), Academy of Sciences, Moscow, M. Kharitonévskiĭ per., 4, U.S.S.R. (*Bull. Acad. Sci. U.R.S.S.*, (*a*) *sér. phys.*, (*b*) *sér. géophys.*, (*c*) *tech. Sci.*)
Bulletin de l'Association suisse des Électriciens, Seefeldstrasse 301, Zürich 8, Switzerland. (*Bull. schweiz. elektrotech. Ver.*)
Bulletin de la Société française des Électriciens, 8-14 Avenue Pierre-Larousse, Malakoff (Seine), France. (*Bull. Soc. franç. Élect.*)
Bulletin of the Technical University Istanbul, Istanbul Teknik Üniversitesi, Gümüssuyu, Istanbul, Turkey. (*Bull. tech. Univ. Istanbul*)

C

Câbles & Transmission, Sotelec, 16 rue de la Baume, Paris 8e, France. (*Câbles & Transm.*)
Cahiers de Physique, 165 Rue de Sèvres, Paris 15e, France. (*Cah. Phys.*)

Canadian Journal of Physics, National Research Council, Ottawa 2, Canada. (*Canad. J. Phys.*)
Canadian Journal of Technology, as for Canadian Journal of Physics. (*Canad. J. Technol.*)

Chalmers tekniska Högskolas Handlingar, N. J. Gumperts Förlag, Göteborg, Sweden. (*Chalmers tek. Högsk. Handl.*)
Communication News, Philips Telecommunications Industries, Hilversum, Netherlands. (*Commun. News*)
Communications on Pure and Applied Mathematics, Interscience Publishers Inc., 250 Fifth Avenue, New York 1, N.Y., U.S.A. (*Commun. pure appl. Math.*)

Comptes Rendus Hebdomadaires des Séances de l'Académie des Sciences, Gauthier-Villars, 55 Quai des Grands-Augustins, Paris 6e, France. (*C. R. Acad. Sci., Paris*)
Comptes Rendus (Doklady) de l'Académie des Sciences de l'U.R.S.S., (in Russian), Moscow B-64, Pedsosenskii per., 21, U.S.S.R. (*C. R. Acad. Sci. U.R.S.S.*)

E

Electrical Communication, International Telephone and Telegraph Corporation, 67 Broad Street, New York 4, N.Y., U.S.A. (*Elect. Commun.*)
Electrical Engineering, Journal of the American Institute of Electrical Engineers, 500 Fifth Avenue, New York 36, N.Y., U.S.A. (*Elect. Engng, N.Y.*)
Electrical Journal, Bouverie House, 154 Fleet Street, London, E.C.4, England. (*Elect. J.*)
Electrical Manufacturing, 1250 Sixth Avenue, New York 20, N.Y., U.S.A. (*Elect. Mfg*)
Electrical Review, Dorset House, Stamford Street, London, S.E.1, England. (*Elect. Rev., Lond.*)
Electrical Times, Sardinia House, Sardinia Street, London, W.C.2, England. (*Elect. Times*)
Electronic Engineering, 28 Essex Street, London, W.C.2, England. (*Electronic Engng*)
Electronic Industries & Tele-Tech, formerly Tele-Tech & Electronic Industries, Chestnut & 56th Sts, Philadelphia 39, Pa, U.S.A. (*Electronic Ind. Tele-Tech*)
Electronics, 330 West 42nd St., New York 36, N.Y., U.S.A. (*Electronics*)
Elektronische Rundschau, Verlag für Radio-Foto-Kinotechnik G.m.b.H., Berlin-Borsigwalde, Eichborndamm 141–167, Germany. (*Elektronische Rundschau*)
Elektrotechnik und Maschinenbau, Journal of the Electrotechnischer Verein Österreichs, Springer Verlag, Wien 1, Molkerbastei 5, Austria. (*Elektrotech. u. Maschinenb.*)
Elektrotechnische Zeitschrift, Edition A & B, VDE-Verlag, Wuppertal-Elberfeld, Brillerstrasse 99, Germany. (*Elektrotech. Z.*)
Endeavour, Imperial Chemical Industries, North Block, Thames House, Millbank, London, S.W.1, England. (*Endeavour*)
Engineer, 28 Essex Street, London, W.C.2, England. (*Engineer, Lond.*)
Engineering, 35 & 38 Bedford Street, London, W.C.2, England. (*Engineering, Lond.*)
Ericsson Review, Telefonaktiebolaget L. M. Ericsson, Stockholm 32, Sweden. (*Ericsson Rev.*)
Ericsson Technics, as for Ericsson Review. (*Ericsson Tech.*)

F

Fernmeldetechnische Zeitschrift, Vieweg & Sohn, Braunschweig, Burgplatz 1, Germany. (*Fernmeldetech. Z.*)
Frequenz, Verlag Schiele & Schön, Berlin S.W.29, Boppstrasse 10, Germany. (*Frequenz*)
Funk-Technik, Verlag für Radio-Foto-Kinotechnik G.m.b.H., Berlin-Borsigwalde, Eichborndamm 141–167, Germany. (*Funk-Technik, Berlin*)

G

G.E.C. Journal, General Electric Company Ltd, Magnet House, Kingsway, London, W.C.2, England. (*G.E.C. J.*)
G.E.C. Telecommunications, General Electric Company Ltd, Coventry, England. (*G.E.C. Telecommun.*)
General Electric Review, General Electric Company, 1 River Road, Schenectady 5, N.Y., U.S.A. (*Gen. Elect. Rev.*)
General Radio Experimenter, General Radio Company, 275 Massachusetts Avenue, Cambridge 39, Mass., U.S.A. (*Gen. Radio Exp.*)
Geofisica Pura e Applicata, Milano, Istituto Geofisico Italiano, Piazza Leonardo da Vinci 12, Italy. (*Geofis. pura appl.*)

H

Helvetica Physica Acta, Journal of the Société suisse de Physique, Editions Birkhäuser, Bâle 10, Switzerland. (*Helv. phys. Acta*)
Hochfrequenztechnik und Elektroakustik, Akademische Verlagsgesellschaft Geest & Portig K.-G., Leipzig C1, Sternwartenstr. 8, Germany. (*Hochfrequenztech. u. Elektroakust.*)

I

Indian Journal of Physics (and Proceedings of the Indian Association for the Cultivation of Science), 210 Bowbazar Street, Calcutta, India. (*Indian J. Phys.*)

J

Journal of the Acoustical Society of America, American Institute of Physics, 57 East 55th Street, New York 22, N.Y., U.S.A. (*J. acoust. Soc. Amer.*)
Journal of Applied Physics, American Institute of Physics, 57 East 55th Street, New York 22, N.Y., U.S.A. (*J. appl. Phys.*)
Journal of Atmospheric and Terrestrial Physics, Pergamon Press Ltd, 4 & 5 Fitzroy Square, London, W.1. (*J. atmos. terr. Phys.*)
Journal of the Audio Engineering Society, P.O. Box 12, Old Chelsea Station, New York 11, N.Y., U.S.A. (*J. audio Engng Soc.*)
Journal of the British Institution of Radio Engineers, 9 Bedford Square, London, W.C.1, England. (*J. Brit. Instn Radio Engrs*)
Journal of the Electrochemical Society, Mount Royal and Guilford Aves, Baltimore 2, Md, U.S.A. (*J. electrochem. Soc.*)
Journal of Electronics, Taylor and Francis Ltd, Red Lion Court, Fleet Street, London, E.C.4, England. (*J. Electronics*)
Journal of the Franklin Institute, Benjamin Franklin Parkway at Twentieth Street, Philadelphia 3, Pa, U.S.A. (*J. Franklin Inst.*)
Journal of Geomagnetism and Geoelectricity, Society of Terrestrial Magnetism and Electricity of Japan, Geophysical Institute, Kyoto University, Kyoto, Japan. (*J. Geomag. Geoelect.*)
Journal of Geophysical Research, 5241 Broad Branch Road, N.W., Washington 15, D.C., U.S.A. (*J. geophys. Res.*)
Journal of the Indian Institute of Science, Indian Institute of Science, Bangalore 3, India. (*J. Indian Inst. Sci.*)
Journal of the Institute of Navigation, John Murray Ltd, 50 Albemarle Street, London, W.1, England. (*J. Inst. Nav.*)
Journal of the Institution of Telecommunication Engineers, Post Box 481, New Delhi, India. (*J. Instn Telecommun. Engrs, India*)
Journal of Mathematics and Physics, Massachusetts Institute of Technology, Cambridge 39, Mass., U.S.A. (*J. Math. Phys.*)
Journal of the Optical Society of America, American Institute of Physics, 57 East 55th Street, New York 22, N.Y., U.S.A. (*J. opt. Soc. Amer.*)
Journal of the Physical Society of Japan, Maruzen Publishing Co., P.O. Box 605 Central, Tokyo, Japan. (*J. phys. Soc. Japan*)
Journal de Physique et le Radium, 12 place Henri-Bergson, Paris 8e, France. (*J. Phys. Radium*)
Journal of the Radio Research Laboratories, Ministry of Postal Services, Tokyo, Japan. (*J. Radio Res. Labs, Japan*)
Journal of Research of the National Bureau of Standards, U.S. Government Printing Office, Washington 25, D.C., U.S.A. (*J. Res. nat. Bur. Stand.*)
Journal of Scientific Instruments, 47 Belgrave Square, London, S.W.1, England. (*J. sci. Instrum.*)
Journal of the Society of Motion Picture and Television Engineers, 40 West 40th Street, New York 18, N.Y., U.S.A. (*J. Soc. Mot. Pict. Telev. Engrs*)
Journal of the Television Society, 164 Shaftesbury Avenue, London, W.C.2, England. (*J. Telev. Soc.*)

M

Marconi Review, Marconi House, Chelmsford, England. (*Marconi Rev.*)
Materials and Methods, Reinhold Publishing Corporation, 430 Park Avenue, New York 22, N.Y., U.S.A. (*Mater. & Meth.*)
Metal Industry, Louis Cassier Company Ltd, Dorset House, Stamford Street, London, S.E.1, England. (*Metal Ind., Lond.*)
Metallurgia, 31 King Street West, Manchester 3, England. (*Metallurgia, Manchr*)
Meteorological Magazine, Her Majesty's Stationery Office, York House, Kingsway, London, W.C.2, England. (*Met. Mag., Lond.*)
Microtecnic, 23 Avenue de la Gare, Lausanne, Switzerland. (*Microtecnic*)
Modern Plastics, 575 Madison Avenue, New York 22, N.Y., U.S.A. (*Mod. Plast.*)
Monthly Notices of the Royal Astronomical Society, Burlington House, London, W.1, England. (*Mon. Not. R. astr. Soc.*)

N

Nachrichten Technik, V.E.B. Verlag Technik, Berlin N.W.7, Unter den Linden 12, Germany. (*NachrTech.*)
Nachrichtentechnische Zeitschrift, formerly Fernmeldetechnische Zeitschrift, Vieweg & Sohn, Braunschweig, Burgplatz 1, Germany (*Nachrichtentech. Z.*)
Nature, Macmillan & Co. Ltd, St. Martin's Street, London, W.C.2, England. (*Nature, Lond.*)
Naturwissenschaften, Springer Verlag, Heidelberg, Neuenheimer Landstrasse 24, Germany. (*Naturwissenschaften*)
Nucleonics, 330 West 42nd Street, New York 36, N.Y., U.S.A. (*Nucleonics*)
Nuovo Cimento, Editore Nicola Zanichelli, Bologna, Via Irnerio 34, Italy. (*Nuovo Cim.*)

O

Observatory, Royal Observatory, Herstmonceux Castle, Hailsham, Sussex, England. (*Observatory*)
Onde électrique, 40 rue de Seine, Paris 6e, France. (*Onde élect.*)
Optik, Wissenschaftliche Verlagsgesellschaft m.b.H., Stuttgart 1, Postfach 40, Germany. (*Optik, Stuttgart*)

P

Philips Research Reports, N.V. Philips Gloeilampenfabrieken, Eindhoven, Netherlands. (*Philips Res. Rep.*)
Philips Technical Review, as for Philips Research Reports. (*Philips tech. Rev.*)
Philips Telecommunication Review, formerly Communication News, Philips Telecommunications Industries, Hilversum, Netherlands. (*Philips Telecommun. Rev.*)
Philosophical Magazine, Taylor and Francis Ltd, Red Lion Court, Fleet Street, London, E.C.4, England. (*Phil. Mag.*)
Philosophical Transactions of the Royal Society, Burlington House, Piccadilly, London, W.1, England. (*Phil. Trans.*)
Physica, Journal of the Dutch Physical Society, Lucas Bolwerk 4, Utrecht, Netherlands. (*Physica*)
Physical Review, American Institute of Physics, 57 East 55th Street, New York 22, N.Y., U.S.A. (*Phys. Rev.*)
Piccole Note—Recensioni e Notizie, Istituto Superiore delle Poste e delle Telecomunicazioni, Roma, Viale di Trastevere 189, Italy. (*Piccole Note Ist. super. Poste e Telecomunicazioni*)
Post Office Electrical Engineers' Journal, Engineer-in-Chief's Office, Alder House, Aldersgate Street, London, E.C.1, England. (*P.O. elect. Engrs' J.*)
Poste e Telecomunicazioni, Roma, Via della Vite 107, Italy. (*Poste e Telecomunicazioni*)
Priroda, Moscow, M. Kharitonévskiĭ per., 4, U.S.S.R. (*Priroda, Moscow*)
Proceedings of the Cambridge Philosophical Society, Cambridge University Press, Bentley House, London, N.W.1, England. (*Proc. Camb. phil. Soc.*)
Proceedings of the Institute of Radio Engineers, 1 East 79th Street, New York 21, N.Y., U.S.A. (*Proc. Inst. Radio Engrs*)
Proceedings of the Institution of Electrical Engineers, Parts A, B and C, Savoy Place, London, W.C.2, England. (*Proc. Instn elect. Engrs*)
Proceedings of the Institution of Radio Engineers, Australia, Science House, Gloucester Street, Sydney, N.S.W., Australia. (*Proc. Instn Radio Engrs Aust.*)

Proceedings of the National Electronics Conference, 84 East Randolph Street, Chicago, Illinois, U.S.A. (*Proc. nat. Electronics Conf., Chicago*)
Proceedings of the Physical Society, 1 Lowther Gardens, Prince Consort Road, London, S.W.7, England. (*Proc. phys. Soc.*)
Proceedings of the Radio Club of America, 11 West 42nd Street, New York, N.Y., U.S.A. (*Proc. Radio Cl. Amer.*)
Proceedings of the Royal Society, Burlington House, Piccadilly, London, W.1, England. (*Proc. roy. Soc.*)
Het PTT-Bedrijf, Centrale Directie PTT, Kortenaerkade 12, 's-Gravenhage, Netherlands. (*PTT-Bedrijf*)

Q

QST, American Radio Relay League Inc., 38 La Salle Road, West Hartford 7, Conn., U.S.A. (*QST*)
Quarterly of Applied Mathematics, Brown University, Providence 12, R.I., U.S.A. (*Quart. appl. Math.*)
Quarterly Journal of Mathematics, Oxford University Press, Amen House, London, E.C.4, England. (*Quart. J. Math.*)
Quarterly Journal of Mechanics and Applied Mathematics, Oxford University Press, Amen House, London, E.C.4, England. (*Quart. J. Mech. appl. Math.*)
Quarterly Journal of the Royal Meteorological Society, 49 Cromwell Road, London, S.W.7. (*Quart. J. R. met. Soc.*)

R

Radio, Izdatel'stvo DOSAAF, Moscow, B-66, Novo-Ryazanskaya ul., 26, U.S.S.R. (*Radio, Moscow*)
Radio-Electronic Engineering, Ziff-Davis Publishing Company, 366 Madison Avenue, New York 17, N.Y., U.S.A. (*Radio-Electronic Engng*)
Radioschau, formerly Radio Technik, Wien VI, Mariahilferstrasse 71, Austria. (*Radioschau*)
Radio Technik. See Radioschau.
Radio & Television News, Ziff-Davis Publishing Company, 366 Madison Avenue, New York 17, N.Y., U.S.A. (*Radio & Telev. News*)
Radiotekhnika, Moscow, Chistoprudnyi Bulvar, 2, U.S.S.R. (*Radiotekhnika, Moscow*)
Radiotekhnika i Elektronika, Moscow K-9, Mokhovaya, 11, U.S.S.R. (*Radiotekhnika i Elektronika*)
RCA Review, RCA Laboratories Division, Princeton, N.J., U.S.A. (*RCA Rev.*)
Referativnyi Zhurnal, Fizika, Moscow, D-119, Baltiskii pos., 42 B, U.S.S.R. (*Referativnyi Zh. Fiz.*)
Rendiconti della Accademia Nazionale dei Lincei, Roma, Via della Lungara 10, Italy. (*R.C. Accad. nat. Lincei*)
Report of Ionosphere Research in Japan, Kokusaibunken Printing Co. Ltd, No. 10, 1-chome, Fujimi-Cho Chiyoda-Ku, Tokyo, Japan. (*Rep. Ionosphere Res. Japan*)
Reports of the Electrical Communication Laboratory, Nippon Telegraph and Telephone Public Corporation, 1551 Kichijoji, Musashino-shi, Tokyo, Japan. (*Rep. elect. Commun. Lab., Japan*)
Reports on Progress in Physics, The Physical Society, 1 Lowther Gardens, Prince Consort Road, London, S.W.7, England. (*Rep. Progr. Phys.*)
Research, Butterworth's Scientific Publications Ltd, 88 Kingsway, London, W.C.2, England. (*Research, Lond.*)
Review of Scientific Instruments, American Institute of Physics, 57 East 55th Street, New York 22, N.Y., U.S.A. (*Rev. sci. Instrum.*)
Reviews of Modern Physics, American Institute of Physics, 57 East 55th Street, New York 22, N.Y., U.S.A. (*Rev. mod. Phys.*)
Revista Española de Electrónica, Apartado 5252, Barcelona, Spain. (*Rev. española Electrónica*)
Revista de Geofisica, La Secretaria, Rios Rosas 9, Madrid, Spain. (*Rev. Geofis., Madrid*)
Revista de Telecomunicación, Palacio de Comunicaciones, Madrid, Spain. (*Rev. Telecomunicación, Madrid*)
Revista Telegrafica Electronica, Arbó Editores, Buenos Aires, Argentina. (*Rev. telegr. Electronica, Buenos Aires*)
Revue générale de l'Électricité, 12 place Henri Bergson, Paris 8e, France. (*Rev. gén. Élect.*)
Revue HF, 55 rue Defacqz, Brussels, Belgium. (*Rev. HF, Brussels*)
Revue d'Optique, 3 & 5 Boulevard Pasteur, Paris 15e, France. (*Rev. d'Optique*)
Revue scientifique, 4 rue Pomereu, Paris 16e, France. (*Rev. sci., Paris*)
Ricerca scientifica, Roma, Piazza della Libertà 10, Italy. (*Ricerca sci.*)
R.S.G.B. Bulletin, New Ruskin House, Little Russell Street, London, W.C.1, England. (*R.S.G.B. Bull.*)

S

Schweizer Archiv für angewandte Wissenschaft und Technik, Buchdruckerei Vogt-Schild AG, Solothurn, Switzerland. (*Schweiz. Arch. angew. Wiss. Tech.*)
Science Reports of the Research Institutes Tohoku University, Tohoku University, Sendai, Japan. (*Sci. Rep. Res. Inst. Tohoku Univ.*)
Scientific Monthly, 10 McGovern Avenue, Lancaster, Pa, U.S.A. (*Sci. Mon.*)
Slaboproudý Obzor, Praha II, Krakovská 8, Czechoslovakia. (*Slab. Obz., Prague*)
Sylvania Technologist, Sylvania Electric Products Inc., Sylvania Center, Bayside, N.Y., U.S.A. (*Sylvania Technologist*)

T

Technical News Bulletin of the National Bureau of Standards, U.S. Government Printing Office, Washington 25, D.C., U.S.A. (*Tech. News Bull. nat. Bur. Stand.*)
Technische Hausmitteilungen des Nordwestdeutschen Rundfunks, H. H. Nölke Verlag, Hamburg 20, Hegestrasse 40, Germany. (*Tech. Hausmitt. Nordw. Disch. Rdfunks*)
Technische Mitteilungen, Journal of the Swiss Post Office, Direction générale PTT, Berne, Speichergasse 6, Switzerland. (*Tech. Mitt. schweiz. Telegr.-Telephonverw.*)
Tele-Tech & Electronic Industries, see Electronic Industries & Tele-Tech. (*Tele-Tech & Electronic Ind.*)
Telefunken Zeitung, Telefunken G.m.b.H., Berlin S.W.61, Mehringdamm 32–34, Germany. (*Telefunken Ztg*)

Télévision, 9 rue Jacob, Paris 6e, France. (*Télévision*)
Tellus, Lindhagengatan 124, Stockholm, Sweden. (*Tellus*)
Tijdschrift van het Nederlands Radiogenootschap, Jagtlustlaan 9, Santpoort-Station, Netherlands. (*Tijdschr. ned. Radiogenoot.*)
TMC Technical Journal, Hollingsworth Works, Dulwich, London, S.E.21, England. (*TMC tech. J.*)
Toute la Radio, 9 rue Jacob, Paris 6e, France. (*Toute la Radio*)
Transactions of the American Geophysical Union, 1530 P Street, N.W., Washington 5, D.C., U.S.A. (*Trans. Amer. geophys. Union*)
Transactions of the American Institute of Electrical Engineers, 500 Fifth Avenue, New York 36, N.Y., U.S.A. (*Trans. Amer. Inst. elect. Engrs*)
Transactions of the Institute of Radio Engineers, 1 East 79th Street, New York 21, N.Y., U.S.A. (*Trans. Inst. Radio Engrs*)
TSF et TV, 40 rue de Seine, Paris 6e, France. (*TSF et TV*)

U

Uspekhi Fizicheskikh Nauk, Moscow, B-71, B. Kaluzhskaya 15 (Gostekhizdat), U.S.S.R. (*Uspekhi fiz. Nauk*)

V

Le Vide, Journal of the Société française des Ingénieurs Techniciens du Vide, 44 rue de Rennes, Paris 6e, France. (*Le Vide*)

W

Weather, 49 Cromwell Road, London, S.W.7, England. (*Weather*)
Wireless Engineer, Dorset House, Stamford Street, London, S.E.1 England. (*Wireless Engr*)
Wireless World, as for Wireless Engineer. (*Wireless World*)

Z

Zeitschrift für angewandte Mathematik und Physik, Editions Birkhäuser, Bâle 10, Switzerland. (*Z. angew. Math. Phys.*)
Zeitschrift für angewandte Physik, Springer Verlag, Berlin W35, Reichpietschufer 20, Germany. (*Z. angew. Phys.*)
Zeitschrift für Metallkunde, Dr. Riederer-Verlag G.m.b.H., Stuttgart, Marienstrasse 50, Germany. (*Z. Metallkde*)
Zeitschrift für Meteorologie, Akademieverlag G.m.b.H., Berlin N.W.7, Schiffbauerdamm 19, Germany. (*Z. Met.*)
Zeitschrift für Naturforschung, Tübingen, Postfach 61, Germany. (*Z. Naturf.*)
Zeitschrift für Physik, Springer Verlag, Berlin W35, Reichpietschufer 20, Germany. (*Z. Phys.*)
Zhurnal eksperimentalnoi i teoreticheskoi Fiziki, Moscow, B-64, Pulsonovskii per., 21, U.S.S.R. (*Zh. eksp. teor. Fiz.*)
Zhurnal tekhnicheskoi Fiziki, Leningrad, 164, V.O., Mendeleevskaya lin., 1, U.S.S.R. (*Zh. tekh. Fiz.*)

WRH