

## Index to Authors, Subjects and Titles, Volume 39

### A

- A.A.A.S. *See* American Association for the Advancement of Science
- A.I.Ch.E. *See* American Institute of Chemical Engineers
- A.I.E.E. *See* American Institute of Electrical Engineers
- A.N.I. *See* Automatic Number Identification
- AN/USC-2 COMMUNICATION SYSTEM 281-84
- A.T.&T. *See* American Telephone and Telegraph Company
- A.T.&T. Annual Report Describes Technological Advances* 144-45
- Abrahams, S. C. *illus* 334
- ACEFONE 326
- ACOUSTICAL SOCIETY OF AMERICA  
Schroeder, M. R., Fellow 74
- ACOUSTICS, simulation of 444-45
- AIR DRYERS 27-29, 246-49
- Air-Drying Apparatus for Microwave Systems*  
(J. M. Jackson) 246-49
- AIR FORCE  
Discoverer XXIII 183  
McMillan, B., Assistant Secretary 262  
SAC alerting system 235-39  
Titan guidance systems 374
- AIR TRAFFIC  
communication systems 154-60  
simulation 254
- Alberts, R. E. *illus* 402
- Alford, E. L. *illus* 12, 39  
biographical material 39  
*Engineering for Safety in the Outside Plant* 10-13
- ALLENTOWN LABORATORIES 185, 400
- Allison, H. W. 22
- ALLOYS, superconducting 164
- AMERICAN ASSOCIATION FOR THE ADVANCEMENT OF SCIENCE,  
Industrial Science Achievement Award 32
- AMERICAN CABLE AND RADIO CORPORATION 92
- AMERICAN ELECTROPLATERS SOCIETY, Silver Medal 376
- AMERICAN INSTITUTE OF CHEMICAL ENGINEERS, Professional  
Progress Award 31
- AMERICAN INSTITUTE OF ELECTRICAL ENGINEERS  
Detroit meeting 414  
Kelly Award 376  
Sarnoff Award 376
- AMERICAN INSTITUTE OF PHYSICS, BTL award 449
- AMERICAN IRON AND STEEL INSTITUTE, Schwab Memorial  
Lecture 258-59
- AMERICAN PHYSICAL SOCIETY PRIZE 74
- AMERICAN TELEPHONE AND TELEGRAPH COMPANY  
annual meeting, 1961 182  
annual report, highlights 144-45
- AMMETERS, statistical 289-91
- AMMONS, J. W. *illus* 280
- AMPLIFIERS  
106-type 58-60  
124-type 58-60  
program circuits 58-60
- Analysis of Atmospheres in Manufacture of Electronic  
Devices* (M. J. Elkind) 61-65
- Anderson, Richard R. *illus* 456  
biographical material 456  
*New Way to Measure Variations in Rotational Speed*  
430-32
- ANNOUNCEMENT SYSTEMS  
3A 299  
9A 299
- ANTENNA(S)  
delay-lens *illus* 247  
horn 180-81; *illus* 247, 277  
*Antenna Steering for Echo I*  
(R. Klahn) 126-29
- Apgar, W. S. *illus* 10, 13, 423
- Applications for E6 Repeaters* (W. J. Kopp) 362-64
- ARMED FORCES COMMUNICATIONS AND ELECTRONICS  
ASSOCIATION 249
- ARMY  
computers, design 70  
Nike-Zeus, *see* Nike-Zeus  
UNICOM system 288
- Around the World by Simulation* (W. L. Cowperthwait,  
H. D. Irwin) 342-49
- Art of Counting Calls* (W. B. Callaway) 285-88
- Ashbaugh, R. P. *illus* 402
- ATLANTIC MISSILE RANGE, computers 70
- Automated Handling of Pins for B Cable Clips* (C. F.  
Kodey) 442-43
- Automatic Card Dialer* (H. J. Hershey, W. Pferd) 350-53
- AUTOMATIC NUMBER IDENTIFICATION  
*block diagram* 99  
identifiers 97-102  
outputers 97-102
- Automatic Number Identification: Outputers and Identifiers*  
(C. H. Dagnall, Jr.) 97-102
- AUTOMATION  
resistors, manufacture 295-97
- AWARDS AND PRIZES  
A.A.A.S. Industrial Science Achievement Award 32  
A.I.Ch.E. Professional Progress Award 31  
Acoustical Society of America 74  
American Electroplaters Society Silver Medal 376  
American Institute of Physics 449  
American Physical Society Prize 74  
Baker, W. O. 262  
Ballantine Medal 376  
Bell Telephone Laboratories 32, 449  
Bown, R. 31  
Compton, K. G. 185  
Courtney-Pratt, J. S. 376  
Deafness Research Foundation 450  
D'Heedene, A. R. 450  
Du Pont Gold Medal 376  
Eta Kappa Nu 110  
Feder, D. O. 376  
Green, E. I. 449  
Hoover Medal 450

Institute of Radio Engineers  
 Fellows 450  
 Founders Award 31  
 Kappel, F. R. 450  
 Kelly, Mervin J. 450  
 Kelly Award 376  
 Koontz, D. E. 376  
 Kreer, J. G. 450  
 Longstreth Medal 376  
 McMillan, B. 450  
 Merrill, J. L., Jr. 376  
 National Association of Corrosion Engineers 185  
 Norton, E. L. 450  
 Nyquist, H. 376  
 Peterson, A. C. 449  
 Pfann, W. G. 31  
 Sarnoff Award 376  
 Schroeder, M. R. 74  
 Scovil, H.E.D. 376  
 Slepian, D. 450  
 Speller Award 185  
 Thomas, G. O. 376  
 Thompson, T. H. 110  
 Townes, C. H. 376  
 Tukey, J. W. 262  
 Williams Chair 261  
*See also* Degrees. Honorary

## B

*BMEWS Communications System* (W. H. Tidd) 382-87  
 BSDP (Bell System Data Processing) 359-61  
 Baker, H. H. *illus* 232  
   biographical material 232  
   *Missile Impact Locating System* 195-200  
 Baker, W. O.  
   National Academy of Sciences 262  
   President's Foreign Intelligence Advisory Board 261  
 Ball, E. T. *illus* 80  
   biographical material 80  
   *Equipment Features of the 82B1 Teletypewriter Switching System* 66-70  
 BALLANTINE (S.) MEDAL  
   Scovil, H.E.D. 376  
 BALLISTIC MISSILE EARLY WARNING SYSTEM 382-87  
 Bardeen, J. A. 3  
 BARRIER-GRID STORE 272  
 Barry, Allen G. *illus* 73  
   biographical material 73  
   Vice President, A.T.&T. 73  
 Bartrinek, E. I. *illus* 402  
 Batdorf, R. L. 125  
 Bates, Richard K. *illus* inside rearcover Oct.  
   biographical material inside rearcover Oct.  
   *Test Equipment for the 82B1 Teletypewriter Switching System* 370-73  
 Becker, F. K. 414  
 Becker, Norman *illus* 325, 340  
   biographical material 340  
   *Removing Water from Buried PIC Cable* 324-26  
 Beckerle, J. C. 198  
 BELL LABORATORIES RECORD  
   Editorial Board, *see* inside frontcover  
   Editorial Staff, *see* inside frontcover  
   Mattson, H. W., Editor 74  
 BELL SYSTEM  
   expansion, 1961 29  
   improvements, 1961 29

*Bell System Data Processing Today* (J. M. Wier) 359-61  
 BELL SYSTEM TECHNICAL JOURNAL  
   July, 1961, issue contents 279  
   Schindler, G. E., Jr., Editor 74  
 BELL TELEPHONE LABORATORIES  
   A.A.A.S. Industrial Science Achievement Award 32  
   American Institute of Physics award 449  
   decentralization 396-402  
   documentation, by computer 211  
   history 396-400  
   *map* 396-97  
   *See also* names of specific Laboratories locations. e.g., Allentown Laboratories  
 Benn, D. R. *illus* 62  
 Bennett, W. R., Jr. 83; *illus* 85  
 Berry, Eugene *illus* 82  
 BEVERLY HILLS, CALIFORNIA 74  
 Bialota, R. J. *illus* 69  
 Bigelow, G. W. *illus* 368  
 Bishop, John B. *illus* 304  
   biographical material 304  
   *New Surface-to-Air Data Communication System* 281-84  
 BISMUTH TELLURIDE 389  
 Black, H. S. 110  
 Black, R., Jr. *illus* 15, 39  
   biographical material 39  
   *Field Testing an Experimental Telephone* 14-17  
 BLADE SYSTEM 70  
 Blair, Claude M. *illus* 323  
   biographical material 323  
   Vice President, A.T.&T. 322  
*Blocking Filters for Coaxial Cables* (K. M. Brown) 327-30  
 Bode, H. W. 262  
 Bolenius, William C. *illus* 323  
   biographical material 323  
   Vice Chairman, Board of Directors, A.T.&T. 322  
*Boston* (warship) *illus* 26  
 Bown, Ralph, biographical material 31  
   I.R.E. Founders Award, 1961 31  
 Bozorth, Richard M. 31  
 Brattain, W. H. 3, 262  
 Brennan, R. J. *illus* frontcover June  
 Brown, H. E. *illus* 298  
 Brown, K. M. *illus* 329, inside rearcover Sept.  
   biographical material inside rearcover Sept.  
   *Blocking Filters for Coaxial Cables* 327-30  
 Brown, W. L. *illus* 88  
 Bryant, N. W. *illus* 40  
   biographical material 40  
   *Directing Naval Weapons* 23-26  
 Buckley, O. E. 262  
 Burrus, C. A., Jr. 124  
 Busch, J. M. 199

## C

CABLE(S)  
   clips, B, pins for, handling 442-43  
   coaxial, filters, blocking 327-30  
   conduit, *see* Conduits  
   gas, metering 218-20  
   joints, sealing 205  
   PIC, water removal 324-26  
   pressurization  
     dryers, air 27-29

- submarine  
 cable ships 32  
 corrosion 93-95  
 damage 93-96  
 environment 92-96  
 expansion 184  
 gages 170-73  
 history 92  
 land extensions 118-21  
 repeaters 103-06
- CABLE AND WIRELESS, LTD. 92
- CABLE SHIPS 32
- CADMIUM SULFIDE 375
- Callaway, W. B. *illus* 286, inside rearcover August  
*Art of Counting Calls* 285-88  
 biographical material inside rearcover August
- CAMERAS, Fastax 214
- CANADA 74
- Canberra (warship) 26
- CAPACITANCE, of diodes 5
- CARD DIALERS *See* Dial Telephone
- Carroll, P. E. *illus* 69  
*Cathode-Ray Displays in Weapon-Direction Systems*  
 (C. W. Norwood) 130-33
- CATHODE-RAY TUBES *See* Electron Tubes
- CATHODES, nickel 18-22
- Cawthon, S. C. *illus* 402
- CEDAR MOUNTAIN, UTAH 260
- Central Office Modifications for Touch-Tone Calling  
 (N. Lazo, A. S. Martins) 437-41
- Central-Office Receiver for Touch-Tone Calling  
 (C. G. Morrison) 201-04
- CENTRAL OFFICES  
 electronic 14, 17, 43, 177-79  
 touch-tone calling 201-04, 437-41
- Changing Pattern of Exchange Outside Plant  
 (W. J. Lally) 422-30
- CHIMPANZEES 450
- CLAY 407
- CLEAR, ALASKA 383-84; *map* 385
- CLIMBERS 11-12; *illus* 12
- CLIPS, cable, B, pins 332-43
- Coldenhoff, M. S. *illus* 298
- Collins, R. J. 280, 395
- COLUMBIA UNIVERSITY  
 Williams Chair 261
- COLUMBUS LABORATORY *illus* 398-99
- Compton, K. G.  
 Speller Award 185
- COMPUTER(S)  
 acoustics, simulation 444-45  
 design 70  
 diodes 7  
 documents, indexing 211
- Computer Simulates Auditorium Acoustics 444-45
- Concentricity and Diameter Gage for Ocean Cable  
 (S. Harris) 170-73
- Concrete for Cable Conduit (W. T. Jervey) 407-09
- CONDUITS  
 clay 407  
 concrete 407-09  
*illus* 408
- CONFERENCE ON MAGNETISM AND MAGNETIC MATERIALS 31
- Conklin, J. L. 199
- Connolly, Richard A. *illus* 340  
 biographical material 340  
*Measurements of Strength Reduction Reveal Wood Decay* 317-20
- Cook, M. H. *illus* 183, 420  
 biographical material 183, 420  
 BTL appointment 183  
*Decentralization: A Feature of Today's Bell Laboratories* 396-402
- CORROSION, of submarine cables 93-95
- Courtney-Pratt, J. S. *illus* 232  
 biographical material 232  
 Du Pont Gold Medal 376  
*High-Speed Photography and Micrography* 212-17  
*Optical Masers and Micrography* 143
- Cowperthwait, William L. *illus* 380  
*Around the World by Simulation* 342-49  
 biographical material 380
- CRAWFORD HILL LABORATORY 299
- Crutchfield, F. L. *illus* 16
- CRYSTAL LAKE, ILLINOIS 15-17
- CRYSTALLOGRAPHY, X-ray 333
- Curtis, H. E. *illus* 79, inside rearcover Nov.  
 biographical material 79, inside rearcover Nov.  
*Interstitial Channels for the TD-2 System* 403-06  
*TH Radio Relay System* 48-52
- D**
- Dacey, George C. *illus* 151  
 biographical material 151, 376  
*Esaki Diodes* 122-25  
 Vice President, Sandia Corp. 376
- Dagnall, C. H., Jr. *illus* 98, 116  
*Automatic Number Identification: Outpulsers and Identifiers* 97-102  
 biographical material 116
- Dahlbom, Carl A. *illus* 268  
 biographical material 268  
*Overseas Dialing: A Step toward Worldwide Telephony* 240-45
- DATA PROCESSING 359-61  
 terminals 414
- Davey, J. R. 414  
 Award 450
- DEAFNESS RESEARCH FOUNDATION, Personal Achievement Award 450
- Decentralization: A Feature of Today's Bell Laboratories*  
 (M. H. Cook) 396-402
- DEFENSE WORK *See* Military Communications
- deGraaff, J. R. 199
- DeGrasse, R. W. 276
- DEGREES, Honorary  
 Pierce, J. R. 262
- D'Heedene, A. R.  
 I.R.E. Fellow 450
- DIAL TELEPHONE, DIALING  
 calls, counting 285-88  
 card 217; *illus*  
 40A 350-53  
 central offices. *see* Central Offices  
 data processing 414  
 exchanges. *see* Exchanges  
 numbering plans 243  
 overseas 240-45

station set, *see* Station Sets  
 statistics 74  
 switching systems, *see* Switching Systems  
 telephone set, *see* Station Sets  
 touch-tone  
   applications 312-16  
   central offices 437-41  
   receiver, central-office 201-04  
   versatility 312-16  
 traffic, *see* Traffic  
 Dickieson, Alton C. *illus* 145  
 Dickten, E. *illus* 124  
 DIFFRACTOMETERS, automated 333  
 Dillon, J. F., Jr. 410-11  
 Dingman, James E. 223; *illus* 323  
   biographical material 323  
   Executive Vice President, A.T.&T. 322  
 DIODES  
   capacitance 5  
   computers 7  
   Esaki, *see* Diodes: tunnel  
   *illus* 9  
   tunnel 9, 122-25  
   uses 3-9  
*Diodes Can Do Almost Anything* (J. H. Forster,  
 R. M. Ryder) 3-9  
*Directing Naval Weapons* (N. W. Bryant) 23-26  
 DISCOVERER XXIII 183  
 DISPLAYS, cathode-ray 130-33, 365-69  
*Displays for Weapons Direction Equipment*  
 (R. Hammell) 365-69  
 DOCUMENTATION, by computer 211  
 Dostis, I. *illus* 2  
 DRYERS, air 27-29, 246-49  
 DU PONT de NEMOURS COMPANY 449  
 DU PONT GOLD MEDAL  
   Courtney-Pratt, J. S. 376

## E

E-6 REPEATER *See* Repeaters  
 EASTMAN KODAK COMPANY 449  
 ECHO (project) 306-11  
   antenna steering 126-29  
   B.S.T.J. issue 279  
 Edgar, W. *illus* 54  
 EDUCATIONAL TELEVISION 450  
 Eglin, J. M. *illus* 151  
   biographical material 151  
   *Land Extensions for Transoceanic Cables* 118-21  
 82B1 TELETYPEWRITER SWITCHING SYSTEM *See*  
 Switching Systems: teletypewriter  
 ELASTOMERS 141  
*Electroforming Waveguide Parts* (N. J. Pierce) 138-41  
*Electrolyzed Quartz Makes High Temperature  
 Resonator* 446-47  
 ELECTRON TUBES  
   cathode-ray displays 130-33  
   cathodes, *see* Cathodes  
   M1935 19  
   106-type 58-60  
   124-type 58-60  
   435A 19  
 ELECTRONIC EQUIPMENT  
   manufacture 61-65

*Electronic Memory Devices* (D. H. Looney) 270-75  
 Elkind, Michael J. *illus* 80  
   *Analysis of Atmospheres in Manufacture of Electronic  
 Devices* 61-65  
   biographical material 80  
 Ellis, W. C. 448  
 EMPLOYER'S INVENTORY OF CRITICAL MANPOWER 449  
*Engineering for Safety in the Outside Plant*  
 (E. L. Alford) 10-13  
 EQUIPMENT DEVELOPMENT 331-32  
*Equipment Features of the 82B1 Teletypewriter Switching  
 System* (E. T. Ball, G. A. Waters) 66-70  
 Esaki, Leo 122  
 ESAKI DIODES *See* Diodes: tunnel  
*Esaki Diodes* (G. C. Dacey) 122-25  
 ESSEX 43-47  
   system diagram 47  
*Essex: A New Concept in Telephone Communications*  
 (W. A. Malthaner) 43-47  
 ETA KAPPA NU AWARD  
   Thompson, T. H. 110  
 EXCHANGES  
   Essex, *see* Essex  
   private branch  
     direct station selection 220-22  
     608A 161-64  
     capacity 163  
     *illus* 162  
     756A 220-22  
     switchboards, pushbutton 161-64  
 EXPERIMENTAL SOLID-STATE EXCHANGE *See* Essex  
 EXPLORER X 183  
 EXPLORER XII, guidance 334

## F

FASTAX CAMERA 214  
 Feder, D. O.  
   American Electroplaters Society Silver Medal 376  
 FEDERAL AVIATION AGENCY 154  
 Feher, George  
   American Physical Society Prize 74  
   biographical material 74  
 FERRITE(S) 275  
   isolators 292-94  
*Ferrite Isolator: New Kind of Pad for T1 Radio-Relay*  
 (A. F. Pomeroy) 292-94  
 Field, Cyrus 92  
*Field Testing an Experimental Telephone*  
 (R. Black, Jr.) 14-17  
 FILTERS, blocking  
   cable, coaxial 327-30  
 FIRE CONTROL SYSTEMS 23-26  
   displays 130-33  
 Fisher, J. P. *illus* 402  
 Fisk, J. B. 262  
   Schwab Memorial Lecture 258-59  
 500-TYPE TELEPHONE SET *See* Station Sets  
 FLYING-SPOT STORE 272-73  
 Fogel, Mrs. Mary *illus* 360  
 Ford, L. S. *illus* 402  
 Forster, John H. *illus* 39  
   biographical material 39  
   *Diodes Can Do Almost Anything* 3-9

40A CARD DIALER *See* Dial Telephone  
Fox, W. M. *illus* inside rearcover July  
biographical material inside rearcover July  
*Self-Protecting Transistor for the E-6 Repeater* 251-53  
FRANKLIN INSTITUTE  
Ballantine Medal 376  
Longstreth Medal 376  
FREQUENCIES  
satellite 110  
TH microwave relay 48-52  
Frost, H. B. *illus* 21, 40  
biographical material 40  
*High-Purity Nickel Cathodes: Performance Studies* 18-22  
FYLINGDALES, ENGLAND 383-84; *map* 385

## G

GAGES  
cable, submarine 170-73  
Gagne, D. J. *illus* inside rearcover June  
biographical material inside rearcover June  
*Speeding Calls through a PBX* 220-22  
Gallaher, Lee H. *illus* 275  
GARNET, iron, yttrium 410-11  
Garrett, C.G.B. 395  
Garrison, W. H. 199  
GAS in cables, metering 218-20  
Gee, R. C. *illus* 21  
GENERAL ELECTRIC COMPANY 449  
GENERATORS, static frequency ringing current 255-57  
GERMANIUM, polishing 107  
Germer, L. H. *illus* 411  
Gianola, U. F. *illus* 75  
Glenn, John H., Jr. *illus* 342  
GLOVES 12  
Golay, M. *illus* 402  
Goldstein, Mrs. Margaret *illus* 178  
Graber, Eric *illus* 135  
GREAT BRITAIN, POST OFFICE 92  
Green, Estill I. 13; *illus* 30  
biographical material 30  
I.R.E. Award 449  
retirement 30  
Greiner, E. S. *illus* 448  
Griffin, *illus* 402  
Gross, C. F. *illus* 402  
Groth, W. B. 110  
GUIDANCE SYSTEMS  
Discoverer XXIII 183  
Explorer X 183  
Explorer XII 334  
Nike-Zeus 31  
Tiros II 32  
Tiros III 284  
Titan 374  
GUIDED MISSILES *See* Missiles  
Gutowski, J. A. *illus* 448

## H

Hale, A. L. *illus* 94  
Hall, A. G. *illus* 402  
HALL EFFECT 392

Hammell, R. *illus* 368, inside rearcover Oct.  
biographical material inside rearcover Oct.  
*Displays for Weapons Direction Equipment* 365-69  
Harris, Smith *illus* 192  
biographical material 192  
*Concentricity and Diameter Gage for Ocean Cables* 170-73  
Harrison & Abramovitz 262  
Hazard, Peggy M. *illus* 116  
biographical material 116  
*How Environment Affects Ocean Cable* 92-96  
*Helium and Diffusion Separation* (K. B. McAfee, Jr.) 354-58  
Helmreich, Ralph L. *illus* 73  
Assistant Vice President, A.T.&T. 73  
biographical material 73  
Herbst, R. T. 200  
Herriott, D. R. 83  
Herriott, W. R. 214  
Hershey, Harold J. *illus* 380  
*Automatic Card Dialer* 350-53  
biographical material 380  
Hessler, C. L. *illus* 402  
*High-Purity Nickel Cathodes: Performance Studies*  
(H. B. Frost) 18-22  
*High-Speed Photography and Micrography*  
(J. S. Courtney-Pratt) 212-17  
Hitchcock, C. H. *illus* 402  
Hofbauer, Thomas J. *illus* 219, inside rearcover June  
biographical material inside rearcover June  
*Metering Gas in Telephone Cables* 218-20  
Hogg, David C. *illus* 304  
biographical material 304  
*Measuring the Sky's Electrical Noise* 276-79  
HOIMDEL LABORATORY 299  
HOOVER MEDAL  
Kelly, M. J. 450  
Horn, F. W. *illus* 402  
Hough, Richard R. *illus* 449  
biographical material 449  
Vice President, A.T.&T. 449  
*How Environment Affects Ocean Cables* (P. M. Hazard) 92-96  
HUMIDITY, and microwave relay systems 247-49  
Hutson, A. R. 375

## I

I.R.E. *See* Institute of Radio Engineers  
ICELAND 74  
*Improved Amplifier for Program Circuits*  
(E. I. Owens) 58-60  
INDEXING, by computer 211  
INDIANAPOLIS LABORATORY 400  
INDIUM ANTIMONIDE 389  
Ingram, S. B. 449  
Inskip, I. S. 13  
INSTITUTE OF RADIO ENGINEERS  
awards  
Green, E. I. 449  
Peterson, A. C. 449  
Fellows  
D'Heedene, A. R. 450  
Kreer, J. G. 450

McMillan, B. 450  
 Norton, E. L. 450  
 Slepian, D. 450  
 Founders Award, 1961 31  
 transmission, radio 72  
 INTERNATIONAL SCIENTIFIC RADIO UNION 72  
*Interstitial Channels for the TD-2 System* (H. E. Curtis)  
 403-06  
 Irvin, H. D. *illus* 379  
*Around the World by Simulation* 342-49  
 biographical material 379  
 ISOLATORS, ferrite, 1A 292-94

## J

Jackson, J. M. *illus* 29, 40, 249, inside rearcover July  
*Air-Drying Apparatus for Microwave Systems* 246-49  
 biographical material 40, inside rearcover July  
*New Air Dryer for Pressurizing Cables* 27-29  
 Jakes, William C., Jr. *illus* 340  
 biographical material 340  
*Project Echo* 306-11  
 Jansky, Karl 299  
 Javan, A. *illus* frontcover March, 85  
 Javan, M. 83  
 Jensvold, R. D. 198  
 Jervey, W. T. *illus* inside rearcover Nov.  
 biographical material inside rearcover Nov.  
*Concrete for Cable Conduit* 407-09  
 Jewett, F. B. 262  
 Johnson, A. R. *illus* 293  
 Jones, R. C. *illus* 402  
 JUNCTIONS 4-5, 89

## K

KS-16575 AMPLIFIER *See* Amplifiers  
 Kaiser, W. 395  
 Kannenberg, Walter F. *illus* inside rearcover July  
 biographical material inside rearcover July  
*Static Frequency-Generators for Ringing Power* 255-57  
 Kappel, Frederick R. *illus* 182, 322  
 A.T.&T. annual report, highlights 144-45  
 biographical material 322  
 Chairman, Board of Directors, A.T.&T. 322  
 Deafness Research Foundation Award 450  
 defense communications, *remarks* 249  
 year-end statement, 1960, *excerpts* 29  
 Kelly, Mervin J. 262  
 biographical material 450  
 Hoover Medal 450  
 KELLY (M. J.) AWARD  
 Nyquist, H. 376  
 King, F. H. *illus* 332  
 King, J. C. 446-47; *illus* 447  
 Kisliuk, P. P. 320-21, 395; *illus* 321  
 Klahn, Richard *illus* 151  
*Antenna Steering for Echo I* 126-29  
 biographical material 151  
 KNOLLS, UTAH 260  
 Kodey, C. F., Jr. *illus* inside rearcover Dec.  
*Automated Handling of Pins for B Cable Clips* 442-43  
 biographical material inside rearcover Dec.  
 Kolb, G. A. *illus* 107

Koontz, D. E.  
 American Electroplaters Society  
 Silver Medal 376  
 Kopp, W. J. *illus* inside rearcover Oct.  
*Applications for E6 Repeaters* 362-64  
 biographical material inside rearcover Oct.  
 Kreer, J. G.  
 I.R.E. Fellow 450  
 Kreider, C. K. *illus* 402  
 Kunzler, J. E. 165; *illus* 86  
 KWAJALEIN ATOLL 31

## L

LADDERS 12  
 Lally, W. J. *illus* 456  
 biographical material 456  
*Changing Pattern of Exchange Outside Plant* 422-30  
*Land Extensions for Transoceanic Cables*  
 (J. M. Eglin, W. K. Oser) 118-21  
 LAURELDALE LABORATORIES 185, 206-11  
 Lazo, Nicholas *illus* 456  
 biographical material 456  
*Central Office Modifications for Touch-Tone Calling*  
 437-41  
 LeCraw, R. C. 410-11; *illus* 410  
 LIGHTNING 251-53  
 Lockyer, J. N. 355  
 LONGSFRETH (E.) MEDAL  
 Merrill, J. L., Jr. 376  
 Longved, Leif *illus* frontcover July  
 Looney, Duncan H. *illus* 304  
 biographical material 304  
*Electronic Memory Devices* 270-75  
 Lowry, G. M. *illus* 178, 192  
 biographical material 192  
*Testing Transistors for the Electronic Central Office*  
 177-79

## M

MILS (Missile Impact Locating System) 195-200  
 M1935 ELECTRON TUBE *See* Electron Tubes  
 McAfee, Kenneth B., Jr. *illus* 380  
 biographical material 380  
*Helium and Diffusion Separation* 354-58  
 McDavitt, M. B. 331; *illus* 183  
 biographical material 183  
 Vice President, BTI. 183  
 McFee, J. H. 375  
 McGibbon, C. *illus* 364  
 McMillan, Brockway *illus* 262  
 Assistant Secretary of Air Force 262  
 biographical material 262  
 I.R.E. Fellow 450  
 McNeeley, Eugene J. *illus* 322  
 biographical material 323  
 President, A.T.&T. 322  
 McPherson, Orland *illus* 173  
 MacRae, A. U. *illus* 411  
 Malthaner, W. A. *illus* 42, 46, 79  
 biographical material 79  
*ESSEX: A New Concept in Telephone Communications*  
 43-47



- Mardis, T. E. *illus* 169, 191  
 biographical material 191  
*Techniques for Microwave Breakdown Measurements* 165-69
- Martin, O. F. *illus* 371
- Martins, A. S. *illus* inside rearcover Dec.  
 biographical material inside rearcover Dec.  
*Central Office Modifications for TouchTone Calling* 437-41
- MASERS 276  
 optical 83-85, 143, 280, 320, 395
- MASSACHUSETTS INSTITUTE OF TECHNOLOGY 449
- Matthias, B. T. *illus* 164; 86
- Mattson, H. W.  
 biographical material 74  
 Editor, *Record* 74
- Measurements of Strength Reduction Reveal Wood Decay*  
 (R. A. Connolly) 317-20
- Measuring Semiconductor Lifetime* (G. K. Wertheim)  
 87-91
- Measuring the Sky's Electrical Noise* (D. C. Hogg,  
 H. E. D. Scovill) 276-79
- Melroy, D. O. 321; *illus* frontcover Sept.
- MEMORY DEVICES 270-75
- MERCURY (project)  
 communications network 108-09, 224-25  
 tracking system 342-49, 450
- MERRIMACK VALLEY LABORATORY 400
- Metering Gas in Telephone Cables* (T. J. Hofbauer)  
 218-20
- Michael, H. J. *illus* 268  
 biographical material 268  
*SAC's Primary Alerting System* 235-39
- MICROGRAPHY 143, 212-17
- MICROWAVE(S), breakdown measurements 165-69
- MICROWAVE RELAY SYSTEMS  
 Echo (project), *see* Echo  
 humidity 247-49  
 Project Echo, *see* Echo  
 TD-2 260  
 channels, interstitial 403-06  
*block diagram* 404-05  
 coupling loss 405
- TH 48-52  
 frequency scheme 48-50  
 protection 52  
 relay station *illus* 50
- TJ  
 isolators, ferrite 292-94
- Miké, Valerie *illus* 79  
 biographical material 79  
*Quality-Control Techniques Applied to Dial-Office Load Balancing* 53-58
- MILITARY COMMUNICATIONS 249  
 AN/USC-2 data link 281-84  
 BMEWS 382-87  
 computers, design 70  
 fire control systems 23-26  
 displays 130-33  
 Nike-Zeus 288  
 firings 435  
 guidance systems 31  
 SAC alerting system 235-39  
 Tiros II  
 guidance systems 32
- Titan  
 guidance systems 374  
 weapons direction displays 365-69
- Miller, C. D. 215
- Miller, L. E. *illus* 207, 232  
 biographical material 232  
*Transistor Development for Manufacture* 206-11
- Miller, R. A. *illus* 429
- Milnar, C. K. *illus* 402
- Mines, W. W. 74
- Missile Impact Locating System* (H. H. Baker) 195-200
- MISSILES  
 BMEWS system 382-87  
 fire control systems 23-26  
 Nike-Zeus 288  
 guidance systems 31  
 tests 435
- Titan  
 guidance systems 374
- MODULATION, pulse code 298
- Monsees, F. W. *illus* 254  
*Training Simulator for Flight Controllers* 254
- Moore, G. E. 22
- MORRIS, ILLINOIS 17, 43
- Morrison, C. G. *illus* 204, 232  
 biographical material 232  
*Central-Office Receiver for Touch-Tone Calling* 201-04
- Morse, Samuel F. B. 92
- Mosko, J. J. *illus* 192  
 biographical material 192  
*Operator-Training Equipment* 174-76
- Multistation Operation in the 82B1 Teletypewriter Switching System* (G. Parker) 130-33
- Murray, Robert W. 141
- Myers, Oscar *illus* 268  
 biographical material 268  
*Overseas Dialing: A Step toward Worldwide Telephony* 240-45

## N

- NATIONAL ACADEMY OF SCIENCES  
 BTL members 262
- NATIONAL AERONAUTICS AND SPACE ADMINISTRATION  
 181, 413  
 Explorer X 183  
 Explorer XII 334  
 Mercury (project), *See* Mercury (project)  
 Tiros III 284
- NATIONAL ASSOCIATION OF CORROSION ENGINEERS  
 Speller Award 185
- NAVY  
 AN/USC-2 data link 281-84  
 displays, cathode-ray 130-33  
 fire control systems 23-26
- Neutralizing Transformers* (L. H. Sessler) 433-35
- New Air Dryer for Pressurizing Cables*  
 (J. M. Jackson) 27-29
- New Electrochemical Technique for Polishing Semiconductor Wafers* 107
- New Look at Equipment Development* 331-32
- New Surface-to-Air Data Communication System*  
 (J. B. Bishop) 281-84
- New Way to Measure Variations in Rotational Speed*  
 (R. R. Anderson) 430-32

*New Way to Seal Cable Joints* (W. Sennett) 205  
 NEW YORK CITY 299  
 NEW YORK WORLD'S FAIR, 1964-1965 261  
 NEWARK COLLEGE OF ENGINEERING 262  
 NICKEL CATHODES 18-22  
 Nielsen, R. J. *illus* 259  
 NIGERIA 74  
 NIKE-ZEUS 288  
   computers 70  
   firings 435  
   guidance systems 31  
   resistors, manufacture 295-97  
 9A ANNOUNCEMENT SYSTEM *See* Announcement Systems  
 NITROGEN 27  
 Nitti, D. J. *illus* 261  
 NOISE, sky 276-79  
 NORTH AMERICAN AIR DEFENSE COMMAND 384, 386-87  
*Northampton* (warship) 26  
 NORTHWESTERN UNIVERSITY 262  
 Norton, E. L., IRE Fellow 450  
 Norwood, C. W. *illus* 131, 152  
   biographical material 151  
   *Cathode-Ray Displays in Weapon-Direction Systems*  
   130-33  
 Nowakowski, L. C. *illus* 373  
 Noweck, Herman E. *illus* 240  
   biographical material 340  
   *Versatility of Touch-Tone Calling* 312-16  
 NUMBER IDENTIFICATION *See* Automatic Number  
 Identification  
 Nyquist, Harry, Kelly Award 376

**O**

O'Byrne, Mary *illus* 361  
 OCEAN CABLES *See* Cable: submarine  
 Ohm, E. A. 277  
 Olsen, K. M. 18  
 Olsen, O. C. *illus* 191  
   biographical material 191  
   *Pushbutton PBX Switchboard* 161-64  
 Omer, Daniel O. 449  
 1A ISOLATOR *See* Isolators  
 106-TYPE AMPLIFIER *See* Amplifiers  
 124-TYPE AMPLIFIER *See* Amplifiers  
 Onstott, Howard K. *illus* 73  
   biographical material 73  
   Vice President, BTL 73  
*Operator-Training Equipment* (J. J. Mosko) 174-76  
*Optical Masers and Micrography* (J. S. Courtney-Pratt) 143  
 Oser, W. K. *illus* 151  
   biographical material 151  
   *Land Extensions for Transoceanic Cables* 118-21  
 Osmun, J. W. *illus* inside rearcover August  
   biographical material inside rearcover August  
   *Statistical Ammeter* 289-91  
 OUTSIDE PLANT  
   pattern, changing 422-30  
   safety engineering 10-13  
*Overseas Dialing: A Step toward Worldwide Telephony*  
 (C. A. Dahlbom, O. Myers) 240-45

Owens, E. L. *illus* 60, 79  
   biographical material 79  
   *Improved Amplifier for Program Circuits* 58-60  
 Ozenberger, M. E. *illus* 191  
   biographical material 191  
   *Voice Communication for Air Traffic Control* 154-60  
 OZONE 141

**P**

PBX *See* Exchanges: private branch  
 PCM *See* Modulation: pulse code  
 PIC CABLE *See* Cable  
 PAPERS 33-34, 75-76, 114-15, 147-48, 189-90, 230-31,  
 263-64, 302-03, 338-39, 379, 418-19, 454-55  
 PAPER INSULATION 27-29  
 Parker, George *illus* 135, 152  
   biographical material 152  
   *Multistation Operation in the 82B1 Teletypewriter Switch-  
 ing System* 134-37  
 PATENTS 34-35, 76-77, 113, 150, 189, 231, 264, 303, 337,  
 378, 417, 453-54  
 Peterson, A. C., IRE Award 449  
 PEXRAD (diffractometer) 333  
 Pfann, William G.  
   A.I.Ch.E. Professional Progress Award 31  
   biographical material 30  
 Pferd, William *illus* 380  
   *Automatic Card Dialer* 350-53  
   biographical material 380  
 PHOTOGRAPHY 212-17  
 Pierce, John R., honorary degrees 262  
 Pierce, N. J. *illus* 139, 152  
   biographical material 152  
   *Electroforming Waveguide Parts* 138-41  
 PLASTIC INSULATED CONDUCTOR CABLE *See* Cable: PIC  
 Pomeroy, A. F. *illus* inside rearcover August  
   biographical material inside rearcover August  
   *Ferrite Isolator: New Kind of Pad for T1 Radio-Relay*  
   292-94  
 Portaro, S. A. 199  
 Powell, Mrs. N. K. *illus* 56  
 PRESIDENT'S FOREIGN INTELLIGENCE ADVISORY BOARD 261  
 PRIMARY ALERTING SYSTEM 235-39  
 PRIVATE BRANCH EXCHANGE *See* Exchanges  
 PROBABILITIES, load balancing 53-58  
 PROGRAM CIRCUITS, amplifiers 58-60  
 PROJECT ECHO *See* Echo  
*Project Echo* (W. C. Jakes, Jr.) 306-11  
 PROJECT MERCURY *See* Mercury (project)  
*Project Mercury Communications Network near  
 Completion* 108-09  
 PROSPECT VALLEY, COLORADO 48  
 PROTECTION  
   repeaters, E-6 251-53  
   TH microwave relay 52  
   transformers, neutralizing 433-35  
   transistors 251-53  
 Pruden, Harold M. *illus* 268  
   biographical material 268  
   *SAC's Primary Alerting System* 235-39  
 PULSE CODE MODULATION *See* Modulation  
*Pushbutton PBX Switchboard* (O. C. Olsen, J. G. Walsh)  
 161-64



**Q**

*Quality-Control Techniques Applied to Dial-Office Load Balancing* (V. Miké) 53-58  
 QUARTZ RESONATORS 446-47

**R**

RADIO RELAY SYSTEMS *See* Microwave Relay Systems  
 RADOMES, Rumford station 412-13; *illus*  
 Raymond, Gus F. 74  
 Read, W. T. 8  
 RECORD *See* Bell Laboratories Record  
 RELAY SYSTEMS *See* Microwave Relay Systems  
*Removing Water from Buried PIC Cable*  
 (N. Becker) 324-26  
 REPEATERS  
   E-6  
     applications 362-64  
     protection 251-53  
     submarine 32  
     components 103-06  
       *illus* 106  
     reliability 103-06  
     stability 103  
*Repeaters for Transatlantic Cables: Passive Components*  
 (A. H. Schafer) 103-06  
*Research Breakthroughs in Optical Masers and Superconductors* 83-96  
 Research Corporation of New York 261  
 RESINS, epoxy  
   cable joints, sealing 205  
 RESONATORS, quartz 446-47  
 REWARDS *See* Awards and Prizes  
 Reynolds, Mrs. G. A. *illus* 319  
 RICHMOND, VIRGINIA 185  
 Rife, H. G. *illus* 402  
 RINGING CURRENT  
   ammeter, statistical 289-91  
   generators 255-57  
 Robertson, C. B. *illus* 402  
 Rongved, Leif *illus* 145  
 Ross, Hardy G. *illus* 73  
   biographical material 73  
   Western Electric appointment 73  
 ROTATIONAL SPEED, measurement 430-32  
 RUBY MASERS 280, 320  
 Ruff, J. A. *illus* 270  
 RUMFORD, MAINE 180-81  
 Ryder, Robert M. *illus* 39  
   biographical material 39  
   *Diodes Can Do Almost Anything* 3-9

**S**

*SAC's Primary Alerting System* (H. J. Michael, H. M. Pruden) 235-39  
 SAFETY, outside plant 10-13  
 SALT LAKE CITY 48  
 Saltzberg, B. R. 414  
*Sapphires to Protect Telephone Satellites from Space Hazards* 258-59  
 SARNOFF (D.) AWARD  
   Townes, C. H. 376

**SATELLITES**

communication 180-81, 223, 413  
   *illus* 145  
   Echo I, antenna steering 126-29  
   frequencies 110  
   protection 258-59  
   Echo I 31  
     antenna steering 126-29  
   Explorer X 183  
   Explorer XII, guidance systems 334  
   Tiros II, guidance systems 32  
   Tiros III, guidance systems 284  
 Sawyer, Ralph A. 449  
 Schafer, A. H. *illus* 116  
   biographical material 116  
   *Repeaters for Transatlantic Cables: Passive Components*  
     103-06  
 Schindler, G. E., Jr.  
   biographical material 74  
   Editor, *B.S.T.J.* 74  
 Schooley, C. E. 32  
 Schroeder, M. R. 444; *illus* 445  
   Acoustical Society of America Fellow 74  
 SCHWAB (C. M.) MEMORIAL LECTURE 258-59  
 Schwartz, A. O. *illus* 181  
 Scovil, H.E.D. *illus* 304  
   Ballantine Medal 376  
   biographical material 304  
   *Measuring the Sky's Electrical Noise* 276-79  
*Search for New Semiconductors* (J. H. Wernick, R. Wolfe)  
   388-94  
*Self-Protecting Transistor for the E-6 Repeater* (W. M. Fox)  
   251-53  
 SEMICONDUCTORS  
   development 388-94  
   Hall Effect 392  
   lifetime measurement 87-91  
   manufacture  
     atmospheres 61-65  
     optical properties 392  
     polishing 107  
 Seng, E. J. *illus* 250  
 Sennett, W.  
   *New Way to Seal Cable Joints* 205  
 Sessler, L. H. *illus* 456  
   biographical material 456  
   *Neutralizing Transformers* 433-35  
 SET *See* Station Sets  
 756A PBX *See* Exchanges: private branch  
 Sharpless, W. M. 9  
 Shewhart, W. A. 53-55  
 Shockley, W. 3, 8  
 SILICON  
   polishing 107  
   ribbon 448  
 SILICON CARBIDE 389  
 SILVER ANTIMONY TELLURIDE 389, 392-94  
 SIMULATORS  
   acoustics 444-45  
   air traffic 254  
   Mercury (project) 342-49  
 608A PRIVATE BRANCH EXCHANGE *See* Exchanges: private branch  
 661 STATION SET *See* Station Sets

- SKY NOISE, electrical 276-79  
 Slayton, Donald *illus* 349  
 Slepian, David, I.R.E. Fellow 450  
 SOCIETY OF MOTION PICTURE AND TELEVISION ENGINEERS  
 Du Pont Gold Medal 376  
 Solawetz, C. J. *illus* 402  
 SOLENOIDS, superconducting 85-86  
 SONY CORPORATION 122  
 SOUND, simulation of 444-45  
 Southwick, W. A. *illus* 402  
 SPACE FLIGHT, communications network 108-09  
 SPEED, rotational, measurement 430-32  
*Speeding Calls through a PBX* (D. J. Gagne) 220-22  
 SPELLER (F. N.) AWARD 185  
 Spencer, E. G. 410-11; *illus* 410  
 STAMPS, postage  
 Echo I 31  
*Static Frequency-Generators for Ringing Power*  
 (W. F. Kannenberg) 255-57  
 STATION SETS  
 Contour *illus* 185  
 500-type *illus* 15  
 661-type 353  
 tone ringer  
 field trial 14-17  
*illus* 15  
 Trimline *illus* 185  
*Statistical Ammeter* (J. W. Osmun) 289-91  
 STATISTICS, load balancing 53-58  
 Story, Paul R. 141  
 Stott, Alexander A. *illus* 299  
 biographical material 299  
 Vice President, A.T.&T. 299  
 STRATEGIC AIR COMMAND, alerting system 235-39  
 SUBMARINE CABLES *See* Cable  
 Sullivan, M. V. *illus* 107  
 SUPERCONDUCTORS 85-86, 164  
 Swart, L. G. 196  
 SWITCHING SYSTEMS  
 electronic  
 memory devices 270-75  
 load balancing 53-58  
 teletypewriter, 82B1  
 equipment 66-70  
 multistation operation 134-37  
 test equipment 370-73  
 300 type 254
- T**
- TD-2 MICROWAVE RELAY SYSTEM *See* Microwave Relay  
 Systems  
*TH Radio Relay System* (H. E. Curtis) 48-52  
 TH RADIO RELAY SYSTEM *See* Microwave Relay Systems  
 TALKS 35-38, 77-78, 111-13, 148-50, 186-88, 226-29,  
 265-67, 300-01, 335-37, 377-78, 415-17, 451-53  
 TAPE, perforated, pressure 261  
 Taylor, G. A. *illus* 71  
*Techniques for Microwave Breakdown Measurements* (T.  
 E. Mardis) 165-69  
 TELEPAK 110  
 TELEPHONE *See* Dial Telephone  
 TELEPHONE SET *See* Station Sets  
 TELETYPEWRITER SWITCHING SYSTEMS *See* Switching  
 Systems  
 TELEVISION, educational 450  
 TELLURIDE, silver antimony 389, 392-94  
 TELSTAR (project), radome 412-13  
 TERMINALS, data processing 414  
 TERRIER (missile) *illus* 26  
 Terry, M. E. 19  
*Test Equipment for the 82B1 Teletypewriter Switching Sys-  
 tem* (R. K. Bates) 370-73  
*Testing Transistors for the Electronic Central Office* (G. M.  
 Lowry) 177-79  
 Thomas, G. O.  
 American Electroplaters Society Silver Medal 376  
 Thompson, T. H.  
 Eta Kappa Nu award 110  
 3A ANNOUNCEMENT SYSTEM *See* Announcement Systems  
 300 SWITCHING SYSTEM *See* Switching Systems  
 Throckmorton, C. *illus* 436  
 THULE, GREENLAND 383-84; *map* 385  
 Tidd, W. H. *illus* 420  
 biographical material 420  
*BMEWS Communications System* 382-87  
 TIROS II, guidance systems 32  
 TIROS III, guidance systems 284  
 TITAN, guidance systems 374  
 Topley, W. H. *illus* 371  
 TOUCH-TONE CALLING *See* Dial Telephone  
 Townes, C. H., Sarnoff Award 376  
 TRACKING SYSTEMS  
 Mercury (project) 342-49, 450  
 TRAFFIC  
 air, *see* Air Traffic  
 load balancing 53 58  
 TRAINING EQUIPMENT  
 operators 174-76  
*Training Simulator for Flight Controllers* (F. W. Monsees)  
 254  
 Tramburulu, R. F. 124  
 TRANSATLANTIC TELEPHONE CABLE, repeaters 103-06  
 TRANSDUCERS, ultrasonic 146; *illus*  
 TRANSFLUXOR 274  
 TRANSFORMERS, neutralizing 433-35  
 TRANSISTOR(s)  
 development 206-11  
 junction *illus* 253  
 manufacture 206-11  
 protection 251-53  
 testing 177-79  
 wafers, polishing 107  
*Transistor Development for Manufacture* (L. E. Miller)  
 206-11  
 TRANSMISSION, radio 72  
 Treuting, R. G. 448  
 TUBES *See* Electron Tubes  
 Tukey, J. W.  
 National Academy of Sciences 262  
 Tweed, D. G. *illus* 316  
 TWISTOR 274-75

## U

U.R.S.I. *See* International Scientific Radio Union  
 UNICOM 288  
 UNITED STATES, telephone statistics 74

## V

VACUUM TUBES *See* Electron Tubes  
*Versatility of Touch-Tone Calling* (H. E. Noweck) 312-16  
*Voice Communication for Air Traffic Control* (M. E. Ozenberger) 154-60

## W

Waddell, John H. 214  
 Wadsworth, W. A. *illus* 71  
 Wagner, R. S. 448  
 Wallace, R. L. 125  
 Walsh, J. G. *illus* 191  
     biographical material 191  
     *Pushbutton PBX Switchboard* 161-64  
 Walters, Guy *illus* 173  
 WAR WORK *See* Military Communications  
 Ward, E. K. *illus* 290  
 WARSHIPS, fire control systems 23-26  
 Waters, George A. *illus* 80  
     biographical material 80  
     *Equipment Features of the 82BI Teletypewriter Switching System* 66-70  
 Watling, R. G. 13  
 WATS SYSTEM 102  
 WAVEGUIDES  
     breakdown measurements 165-69  
     electroforming 138-41  
     isolators, ferrite 292-94  
 WEAPONS  
     fire control systems 23-26  
     displays 130-33, 365-69

Wegman, E. C. *illus* 402  
 WENDOVER, NEVADA 260  
 Wernick, J. H. *illus* 388, 420  
     biographical material 420  
     *Search for New Semiconductors* 388-94  
 Wertheim, Gunther K. *illus* 116  
     biographical material 116  
     *Measuring Semiconductor Lifetime* 87-91  
 West, John W. *illus* 145, frontcover July  
 WESTERN ELECTRIC 182, 184, 288  
 WESTERN ELECTRONIC SHOW AND CONVENTION 320-21  
 WESTERN UNION TELEGRAPH COMPANY 92  
 White, D. L. 146, 375  
 Wiegman, W. *illus* frontcover April  
 Wier, J. M. *illus* inside rearcover Oct.  
     *Bell System Data Processing Today* 359-61  
     biographical material inside rearcover Oct.  
 WIDE AREA TELEPHONE SERVICE 102  
 Wilsey, C. E. *illus* 402  
 Williams, Robert R. 261  
 Wolfe, Raymond *illus* 388, 420, frontcover Nov., 394  
     biographical material 420  
     *Search for New Semiconductors* 388-94  
 WOOD DECAY 317-20  
*World's Largest Antenna for Space Communications* 180-81

## Y

Young, Fred *illus* 129

## Z

Zahoruiko, J. F. *illus* 332  
 Zuckert, Eugene M. *illus* 262