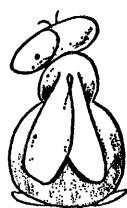


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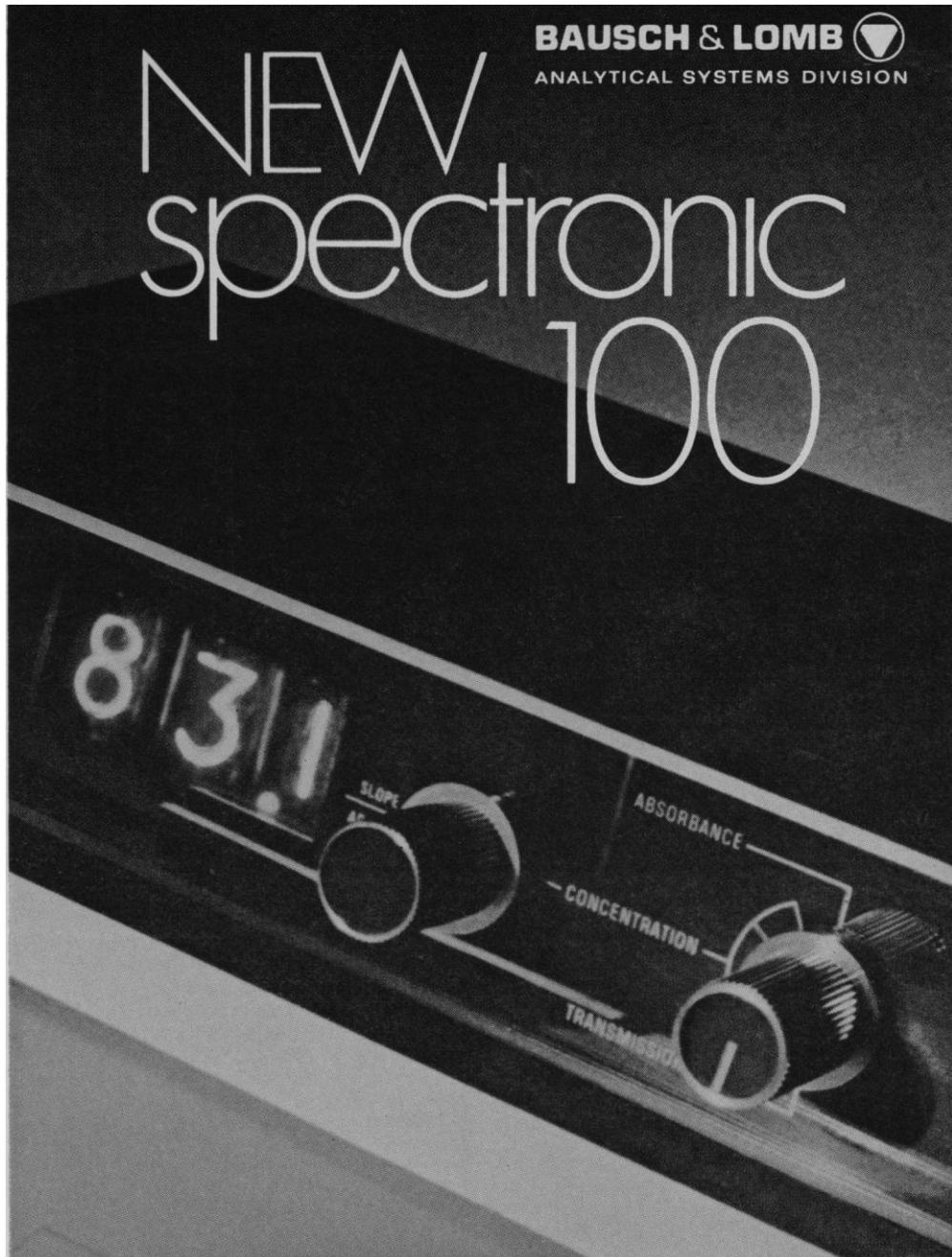
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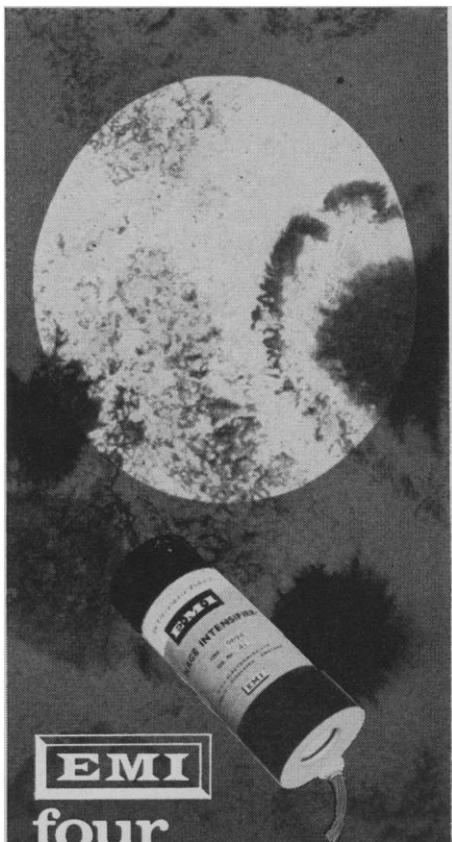
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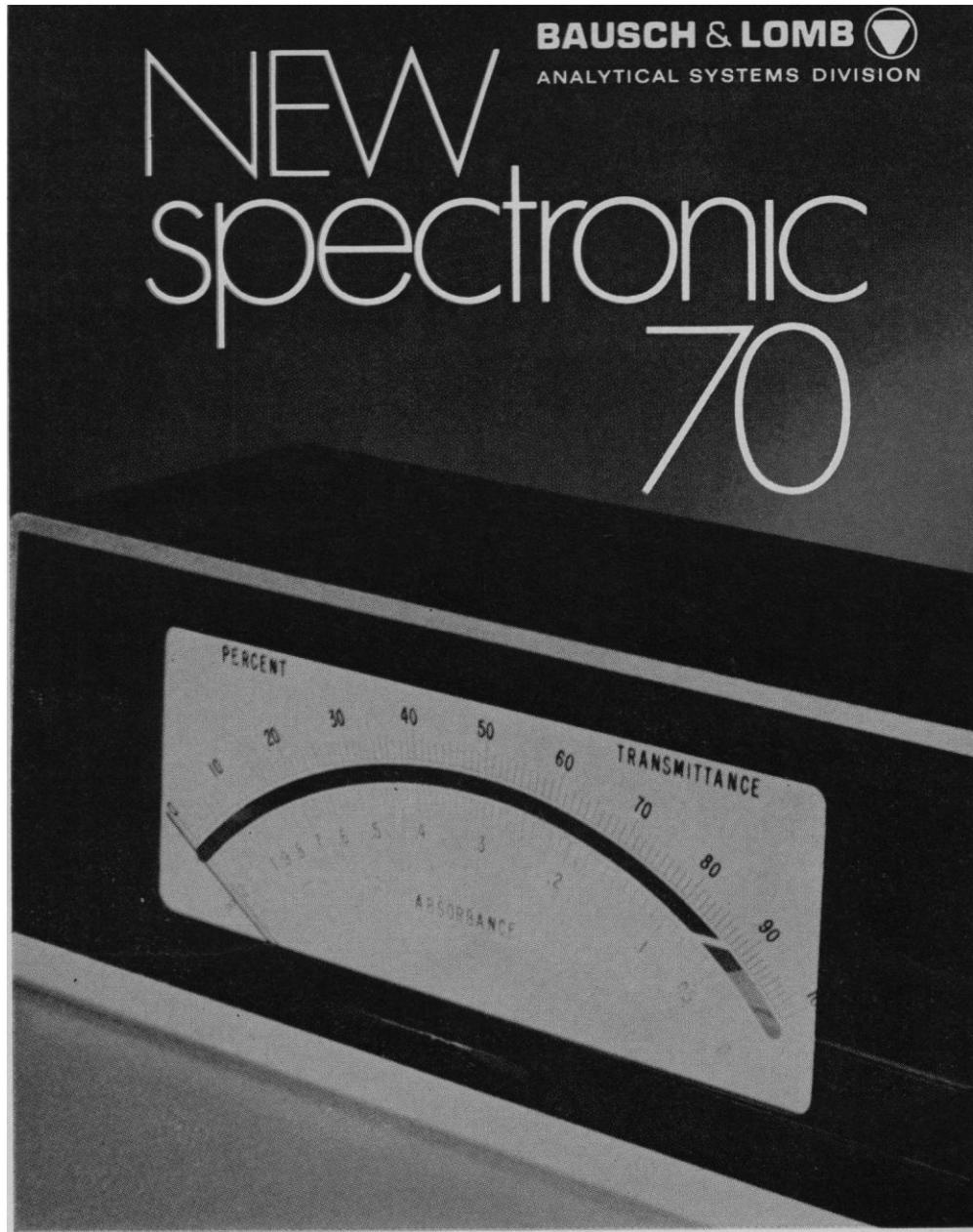
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*A Glossary of Genetics and Cytogenetics*, ed. 3 (first English ed.), R. Rieger, A. Michaelis, and M. M. Green, 2 May 1969, 542  
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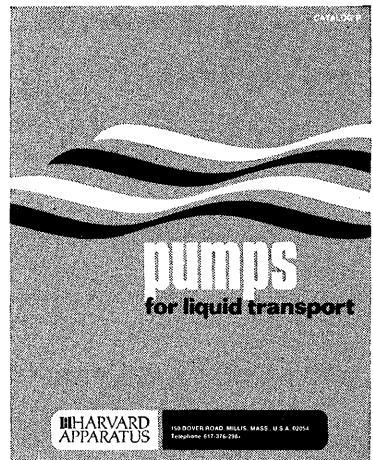
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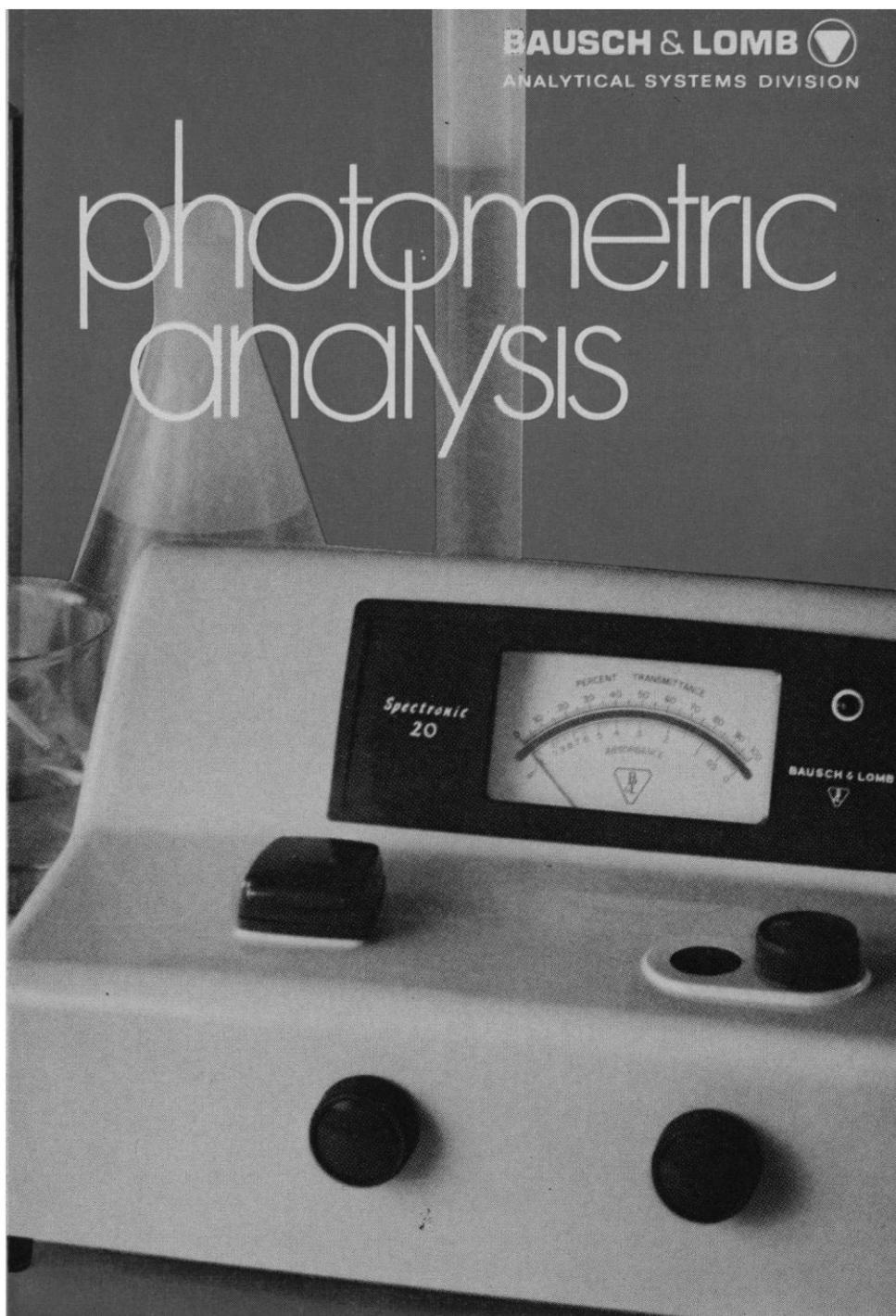
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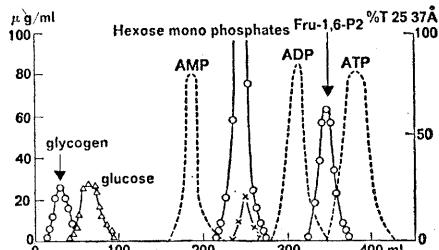


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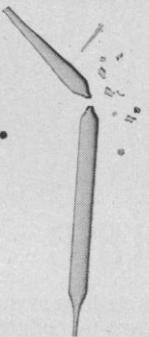
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- The McGraw-Hill Encyclopedia of Space*, 13 Dec. 1968, 1259
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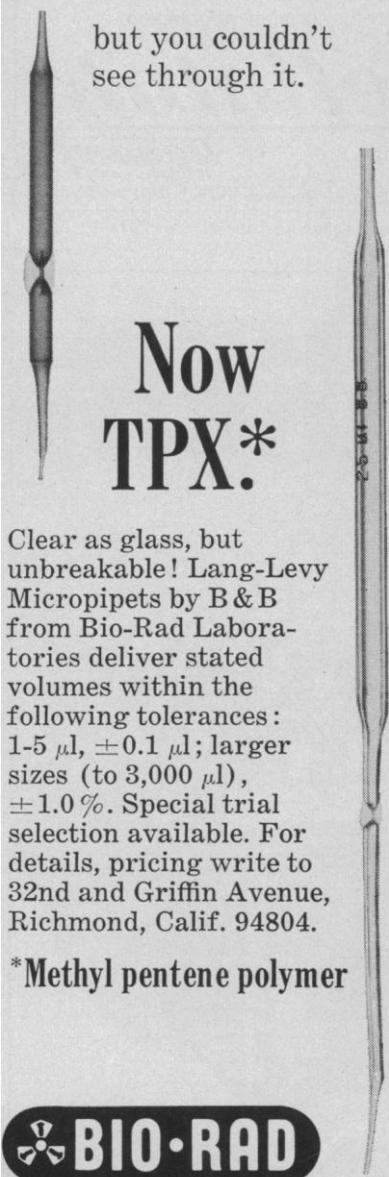
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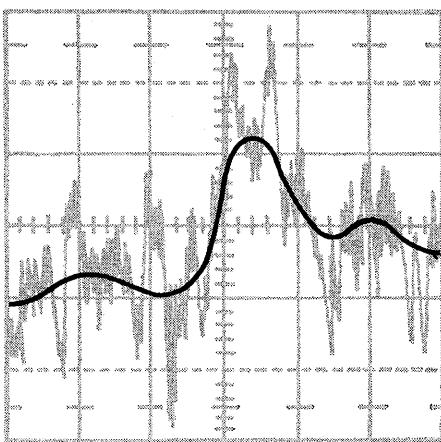
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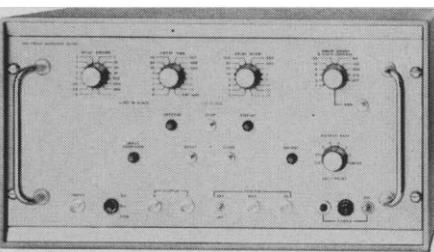
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*Principles of Insect Chemosterilization*, G. C. LaBrecque and C. N. Smith, Eds., 31 May 1968, 982  
*Principles of Regeneration*, R. J. Goss, 25 Apr. 1969, 417  
*Principles of Stellar Evolution and Nucleosynthesis*, D. D. Clayton, 28 Mar. 1969, 1443  
*Problems of Chinese Geotectonics* (in Chinese), C. Kuo-ta et al., 22 Nov. 1968, 888  
*Problems of Structural Geology* (in Chinese), 22 Nov. 1968, 888  
*Proceedings of the Fourteenth International Ornithological Congress*, D. W. Snow, Ed., 26 July 1968, 352  
*Proceedings of the Third International Congress of Human Genetics*, J. F. Crow and J. V. Neel, Eds., 14 June 1968, 1215  
*Processes of Coastal Development*, V. P. Zenkovich, 4 Oct. 1968, 112  
*Progress in Gas Chromatography*, J. H. Purnell, Ed., 1 Nov. 1968, 557  
*Progress in Microbiological Techniques*, C. H. Collins, Ed., 19 July 1968, 261  
*Progress in Phytochemistry*, vol. 1, L. Reinhold and Y. Liwschitz, Eds., 17 Jan. 1969, 271  
*Progress in Primatology*, D. Starck, R. Schneider, and H.-J. Kuhn, Eds., 28 June 1968, 1441  
*Progress in Theoretical Biology*, vol. 1, F. M. Snell, Ed., 23 Aug. 1968, 775  
*The Prometheus Project*, G. Feinberg, 18 Apr. 1969, 285  
*The Promise of Space*, A. C. Clarke, 30 Aug. 1968, 874  
*Prostaglandins*, S. Bergström and B. Samuelsson, Eds., 13 Sept. 1968, 1124  
*Prostaglandins*, U. S. von Euler and R. Eliasson, 2 Aug. 1968, 458  
*Protein Nutrition and Free Amino Acid Patterns*, J. H. Leathem, Ed., 7 Mar. 1969, 1051  
*Psychiatric Epidemiology and Mental Health Planning*, R. R. Monroe, G. D. Klee, and E. B. Brody, Eds., 26 July 1968, 347  
*The Quaternary*, vol. 2, K. Rankama, Ed., 24 May 1968, 868  
*Quaternary Paleoecology*, E. J. Cushing and H. E. Wright, Jr., Eds., 10 May 1968, 670  
*Radar Astronomy*, J. V. Evans and T. Hagfors, Eds., 31 May 1968, 980  
*Radar Ornithology*, E. Eastwood, 24 May 1968, 869  
*Radiation Biology*, A. P. Casarett, 7 Feb. 1969, 560  
*Radiation Research*, G. Silini, Ed., 14 June 1968, 1214

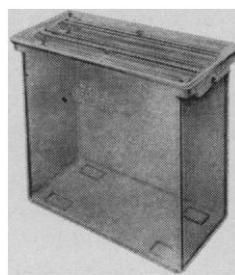
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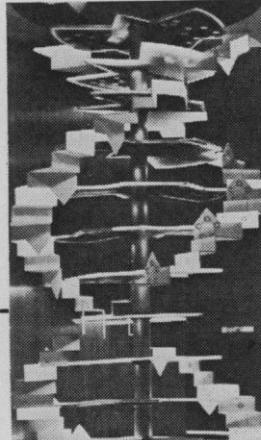
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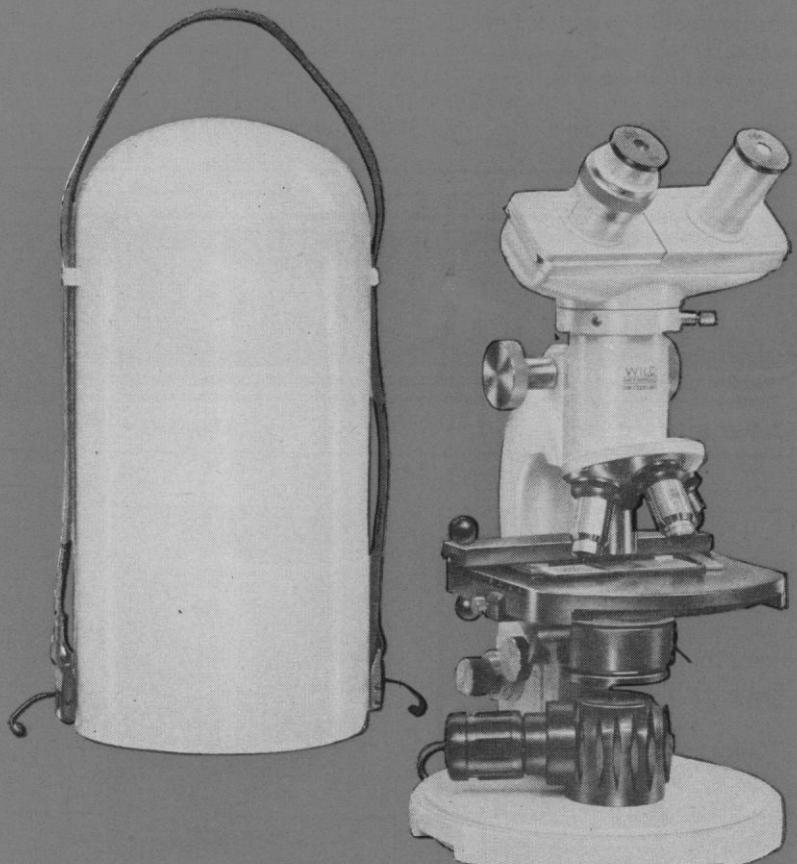
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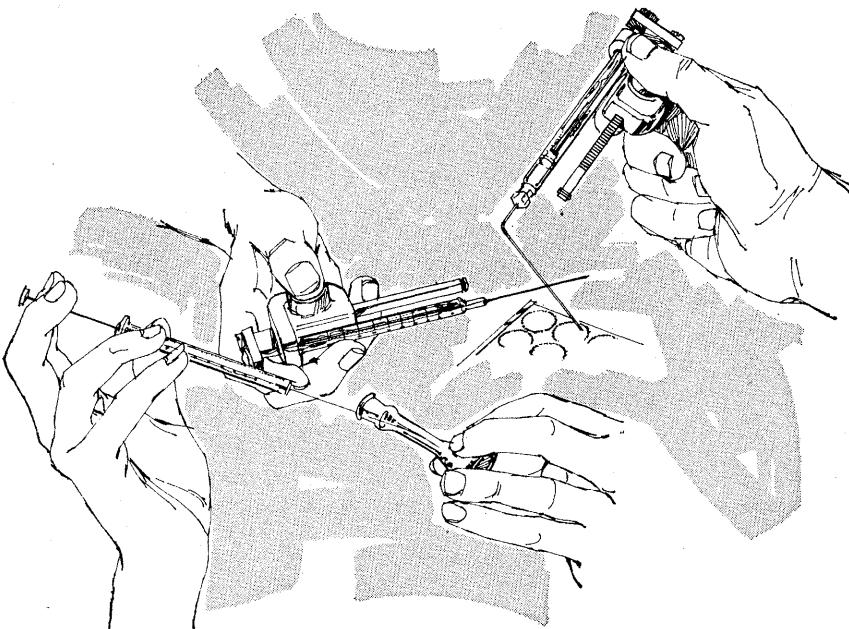
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- Radical Ions*, E. T. Kaiser and L. Kevan, Eds., 2 May 1969, 541  
*The Radiobiology of Cultured Mammalian Cells*, M. M. Elkind and G. F. Whitmore, 12 July 1968, 152  
*Raspail*, D. B. Weiner, 28 Feb. 1969, 920  
*The Rays Are Coloured*, W. D. Wright, 11 Oct. 1968, 249  
*Reactions of Transition-Metal Complexes*, J. P. Candler, K. A. Taylor, and D. T. Thompson, 27 Sept. 1968, 1335  
*Recent Advances in Phytochemistry*, vol. 1, T. J. Mabry, R. E. Alston, and V. C. Runeckles, Eds., 17 Jan. 1969, 271  
*Reflections on Men and Ideas*, G. de Santillana, 21 Feb. 1969, 799  
*Relativity and Cosmology*, H. P. Robertson and T. W. Noonan, 2 May 1969, 540  
*Relativity Theory and Astrophysics*, J. Ehlers, Ed., 6 Sept. 1968, 997  
*Reproduction in the Female Mammal*, G. E. Lamming and E. C. Amoroso, Eds., 25 Oct. 1968, 447  
*Reproductive Behaviour in Ungulates*, A. F. Fraser, 25 Apr. 1969, 415  
*Rheology of the Circulation*, R. L. Whitmore, 7 Mar. 1969, 1054  
*The Riddle of Gravitation*, P. G. Bergmann, 20 Dec. 1968, 1380  
*The Rise of Anthropological Theory*, M. Harris, 4 Oct. 1968, 108  
*River Plains and Sea Coasts*, R. J. Russell, 10 May 1968, 670  
*Rock Mechanics in Engineering Practice*, K. G. Stagg and O. C. Zienkiewicz, Eds., 21 Feb. 1969, 804  
*Rockets, Missiles, and Men in Space*, ed. 4, W. Ley, 30 Aug. 1968, 874  
*The Roe Deer of Cranborne Chase*, R. Prior, 10 Jan. 1969, 172  
*Rotational Spectra and Molecular Structure*, J. E. Wollrab, 17 May 1968, 756  
*The Royal Society*, M. Purver, 21 June 1968, 1328  
*Russian Solid-Fuel Rockets*, V. N. Sokolskii, 10 May 1968, 669  
*Science in Nineteenth-Century America*, N. Reingold, Ed., 10 May 1968, 638  
*Science in Progress*, 16th series, W. R. Brode, Ed., 21 June 1968, 1330  
*Science Policy and the University*, H. Orlans, Ed., 20 Sept. 1968, 1232  
*Scientific Contributions of Selman A. Waksman*, H. B. Woodruff, Ed., 24 Jan. 1969, 378  
*Scientific Illustration*, C. S. Papp, 10 May 1968, 660  
*Scientific Selection of Catalysts*, A. A. Balandin, B. A. Kazanskii, V. E. Vasserberg, G. V. Isagulyants, and G. I. Levi, Eds., 14 Mar. 1969, 1189  
*The Search for Understanding*, C. P. Haskins, Ed., 10 May 1968, 640  
*The Selected Papers of E. S. Pearson*, 10 May 1968, 661  
*Selected Works: Granites and Migmatites*, J. J. Sederholm, 7 Feb. 1969, 557  
*A Selection of Early Statistical Papers of J. Neyman*, 10 May 1968, 661  
*Serotonin*, I. H. Page, 14 Mar. 1969, 1189  
*Simple Dense Fluids*, H. L. Frisch and Z. W. Salsburg, Eds., 14 Mar. 1969, 1190  
*The Skeletal Biology of Earlier Human Populations*, D. R. Brothwell, Ed., 6 Sept. 1968, 1001

- The Social Meanings of Suicide*, J. D. Douglas, 28 Feb. 1969, 921  
*Social Organization of Hamadryas Baboons*, H. Kummer, 9 Aug. 1968, 561  
*The Social Organization of Juvenile Justice*, A. V. Cicourel, 10 May 1968, 644  
*The Social Programs of Sweden*, A. H. Rosenthal, 10 May 1968, 648  
*Socialization and Society*, J. A. Clausen, O. G. Brim, Jr., A. Inkeles, R. Lippitt, E. Maccoby, M. B. Smith, 20 Dec. 1968, 1376  
*Society's Children*, C. Nordstrom, E. Z. Friedenberg, and H. A. Gold, 10 Jan. 1969, 169  
*Soil Biochemistry*, A. D. McLaren and G. H. Peterson, Eds., 28 June 1968, 1441  
*Soil-Plant Relationships*, ed. 2, C. A. Black, 28 June 1968, 1441  
*Solar Activity*, E. Tandberg-Hanssen, 21 June 1968, 1330  
*Solar Physics*, J. N. Xanthakis, Ed., 2 May 1969, 542  
*Source Book in Chemistry, 1900-1950*, H. M. Leicester, Ed., 4 Oct. 1968, 110  
*South of Yosemite*, J. Muir, 7 Mar. 1969, 1051  
*Southeast Asian Tribes, Minorities, and Nations*, P. Kunstadter, Ed., 31 May 1968, 983  
*Southwest Indian Craft Arts*, C. L. Tanner, 7 Mar. 1969, 1053  
*The Soviet Academy of Sciences and the Communist Party, 1927-1932*, L. R. Graham, 16 Aug. 1968, 676  
*Special Relativity*, A. Shadowitz, 10 May 1968, 667  
*Spectral Line Formation*, J. T. Jefferies, 20 Sept. 1968, 1235  
*Spin Waves*, A. I. Akhiezer, V. G. Bar'yakhtar, and S. V. Peletinskii, 28 Feb. 1969, 923  
*Statistical Continuum Theories*, M. J. Beran, 4 Apr. 1969, 62  
*Stochastic Models for Social Processes*, D. J. Bartholomew, 4 Apr. 1969, 59  
*The Story of Jodrell Bank*, B. Lowell, 22 Nov. 1968, 886  
*Structural Chemistry and Molecular Biology*, A. Rich and N. Davidson, Eds., 25 Oct. 1968, 450  
*Structure of High-Resolution NMR Spectra*, P. L. Corio, 5 July 1968, 38  
*The Structure of the Quiet Photosphere and the Low Chromosphere*, C. de Jager, Ed., 2 May 1969, 542  
*Studies in the Structure, Physiology and Ecology of Molluscs*, V. Fretter, Ed., 4 Apr. 1969, 61  
*Superconductivity in Science and Technology*, M. H. Cohen, Ed., 13 Sept. 1968, 1122  
*The Systems Approach*, C. W. Churchman, 21 Mar. 1969, 1315  
*Systems Theory and Biology*, M. D. Mesarović, Ed., 5 July 1968, 34  
*Technology of Liquid Helium*, R. H. Krop-schot, B. W. Birmingham, and D. B. Mann, Eds., 7 Mar. 1969, 1052  
*The Temporary Society*, W. G. Bennis and P. E. Slater, 18 Oct. 1968, 343  
*Teratology of the Central Nervous System*, H. Kalter, 13 Dec. 1968, 1259  
*Textbook of Theoretical Botany*, vol. 3, R. C. McLean and W. R. Ivimey-Cook, 15 Nov. 1968, 786  
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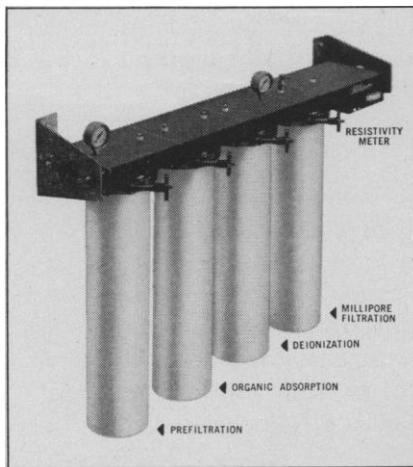
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- Theoretical Methods in Plasma Physics*, N. G. Van Kampen and B. U. Felderhof, 5 July 1968, 38
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- Theory of Magnetism in Transition Metals*, W. Marshall, Ed., 12 July 1968, 154
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- Thomas Willis, 1621-1675*, H. Isler, 13 Dec. 1968, 1264
- Thymidine Metabolism and Cell Kinetics*, J. E. Cleaver, 1 Nov. 1968, 556
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- "Torrey Canyon" Pollution and Marine Life, J. E. Smith, Ed., 23 Aug. 1968, 774
- Towards a Theoretical Biology*, vol. 1, C. H. Waddington, Ed., 13 Sept. 1968, 1122
- Tracks*, E. A. R. Ennion and N. Tinbergen, 10 May 1968, 658
- Trackers of the Skies*, E. N. Hayes, 28 Mar. 1969, 1443
- Traité de Biologie de l'abeille*, R. Chauvin, Ed., 13 Sept. 1968, 1123
- Traité de Paleobotanique*, vol. 2, E. Boureau, Ed. 28 June 1968, 1442
- Treasures of Prehistoric Art*, A. Leroy-Gourhan, 12 July 1968, 150
- Treatise on Collagen*, vol. 1, G. N. Ramachandran, Ed.; vols 2 and 3, B. S. Gould, Ed., 11 Apr. 1969, 172
- The Trial of the Assassin Guiteau*, C. E. Rosenberg, 2 Aug. 1968, 453
- Tritium-Labeled Molecules in Biology and Medicine*, L. E. Feinendegen, 17 May 1968, 757
- Tropical Crops: Dicotyledons*, J. W. Purseglove, 7 Mar. 1969, 1050
- Ultrastructure of Fertilization*, C. R. Austin, 14 Mar. 1969, 1187
- Uniformity and Simplicity*, C. C. Albritton, Jr., Ed., 2 Aug. 1968, 453
- The Unprepared Society*, D. N. Michael, 4 Apr. 1969, 58
- Urea as a Protein Supplement*, M. H. Briggs, Ed., 22 Nov. 1968, 889
- Venomous Animals and Their Venoms*, vol. 1, W. Bücherl, E. E. Buckley, and V. Deulofeu, Eds., 31 May 1968, 984
- Vistas in Astronomy*, vol. 9, A. Beer, Ed., 29 Nov. 1968, 990
- Water Deficits and Plant Growth*, T. T. Kozlowski, Ed., 25 Apr. 1969, 416
- Wirkungsmechanismen von Fungiziden und Antibiotika*, M. Girbardt, Ed., 5 July 1968, 37
- Wood as Raw Material*, G. Tsoumis, 15 Nov. 1968, 788
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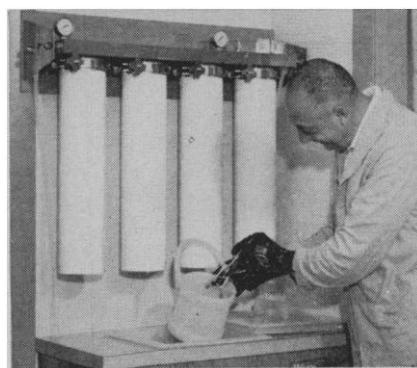
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