## AUTHOR INDEX

Abarca. Belén, 1865
Abdul-Majid, Qais, 359
Abe, Masao, 1937
Abe, Nobuhiro, 313
Abe, Yuriko, 1727
Abouamer, Karima M., 1991
Acheson, R. Morrin, 1275, 2321
Ackland, Darren J., 2689, 2695
Adam, Günter, 2111
Adamopoulos, Spiros, 2073
Adebayo, Adelaide T. O. M., 2819
Adegoke, Emmanuel A., 1421, 2475
Adesogan, E. Kayode, 1421
Afonso, Carlos M., 1221
Aggarwal, Varinder K., 2579
Agosta, William C., 365
Aida, Misako, 2141
Aiello, Enrico, 1959, 2855
Ajaz, Abid A., 27
Akai, Shuji, 1099
Akase, Fumiaki, 1021
Akkerman, Marcel A. J., 2481
Al-Bayati, Redha I. H., 717
Al-Hazimi, Hassan M. G., 265
Al-Kinany, Mohammed, 2049
Al-Masoudi, Najim A. L., 1413, 2061
Alajarin, Mateo, 1853, 2667
Alam, Muzaffar, 1701
Alam, Shaikh Khairul, 2109
Alberola, Angel, 2125
Ali, Irshad, 1701
Almerico, Anna Maria, 1959, 2855
Alo, Babajide I., 1421
Amornraksa, Kitti, 2285
Anastasis, Panayiotis, 2427
Anazawa, Akira, 1501
Andrés, Celia, 2125
Angeletti, Enrico, 713, 2157, 2159
Ansell, Peter J., 1275
Aoki, Kumi, 1845
Arán, Vicente J., 955
Arai, Sadao, 481
Araki, Koji, 2297
Arias, José M., 471
Arimura, Takashi, 1, 2297
Armesto, Diego, 743, 2663
Arnone, Alberto, 571, 1353
Arrieta, Ana, 845
Arunachalam, Thangavel, 61
Asahina, Masahiro, 2203
Asai, Koji, 1171
Ashmawy, Mohamed I. Al, 2729
Atkinson, Robert S., 1135, 2787, 2797, 2803
Atta-ur-Rahman, 1701
Aurrecoechea, Jose M., 769, 2539, 2673
Ayoub, Miqdad T., 717
Azuma, Terukazu, 645, 1951
Baig, Ghouse Unissa, 665
Baird, Mark S., 1609, 2109
Baird, Peter D., 1785
Baker, Mark G., 2027
Baker, Raymond, 1123, 1613, 1623
Ballesteros, Rafael, 1865

Balzarini, Jan, 457
Ban, Masatoshi, 187
Bandzouzi, Alphonse, 661
Baraniak, Janina, 1645
Barbaro, Gaetano, 2643, 2647
Barber, Jill, 2743
Barbour, Robert H., 2069
Barluenga, José, 1017, 2605
Barros, M. Teresa, 1221
Bartnik, Romuald, 715
Barton, Derek H. R., 241, 251
Barton, John W., 1541, 1561, 2443
Baruah, Arpan K., 1995
Basile, Tiziana, 2637
Bates, Robert B., 2809
Battaglia, Arturo, 2647
Batten, Richard J., 1999
Battersby, Alan R., 1667, 1679, 1689, 2027
Bayliff, Andrew E., 763
Baynham, Mark K., 1987
Beauhaire, Josiane, 1841
Beddoes, Roy L., 1599
Begley, Michael J., 353, 2593, 2775
Bell, Anthony M. T., 2593
Benati, Luisa, 99, 2815
Bergman, Jan, 519
Berlin, Anna, 2631
Bernáth, Gábor, 237, 909
Bernardi, Rosanna, 1607
Betancor, Carmen, 937
Bezuidenhoudt, Barend C. B., 1081
Bidd, Ilesh, 2455
Birtwistle, Ian, 1347
Bischofberger, Karl, 1377
Bishop, David I., 1599
Biswas, Sundar Gopal, 2109
Blackburn, G. Michael, 181
Blagg, Julian, 689, 1805
Blake, Keith W., 1049
Blazejewski, Jean-Claude, 1861
Bliss, Edward A., 2217
Bloom, A. Jon, 2737
Blowers, John W., 2079
Bolton, Richard E., 931
Bondeel, Georges M. A., 2715
Bongini, Alessandro, 2637
Bonini, Bianca F., 2643
Bonnett, Raymond, 439, 1063, 1383
Booth, Brian L., 1521, 2049
Booth, Paul M., 121
Boulton, A. J., 695,2073
Bowers, Kevin G., 1657
Bowman, W. Russell, 2819
Boyd, Derek R., 369
Boyer, Joseph H., 2163
Boyes, R. Hugh O., 1613
Bradamante, Silvia, 515, 2631
Bramley, Susan E., 639
Branch, Clive L., 45
Brandt, E. Vincent, 1081, 2345
Brandt, Edward V., 2353
Brennan, James P., 2079
Bretón, José L., 471
Brewster, Keith, 21
Bridges, Jonathan, 2593
Brimacombe, John S., 2421

Brindley, Jocelyn C., 1153
Broadbent, Hugo A., 2027
Brooke, Gerald M., 2091
Broom, D. Mark P., 1613
Brown, David, 181
Brown, George R., 547, 553, 557
Brown, Linda, 595
Brownsort, Peter A., 2339
Bruché, Luca, 399
Bryce-Smith, Derek, 1147
Bryce, Martin R., 763
Buchanan, J. Grant, 2371, 2377
Bull, James R., 37, 1377
Bundle, David R., 9
Burden, Peter M., 169
Burford, S. Cliff, 1573
Burton, George, 635, 1873
Bushby, Richard J., 2497
Buss, Antony D., 2569
Butler, Richard N., 1039
Butt, Suzanne, 903
Buttrus, Nabeel H., 851
Cable, Karl M., 1593
Cadogan, J. I. G., 1407
Cainelli, Gianfranco, 2637
Caldwell, Jennifer M., 1153, 2305
Camarasa, Maria-Jose, 2317
Campbell, Simon F., 2171, 2183,

## 2189

Caneschi, A., 1077
Canevotti, Renato, 2301
Cano, Felix Hernández, 1853
Cardillo, Rosanna, 1607
Carisi, Patrizia, 2647
Carless, Howard A. J., 1999
Carpenter, T. Adrian, 1689
Carrau, Reyes, 937
Casati, Rosangela, 1743, 2753
Casella, Luigi, 71
Casey, Michael, 1389
Caspi, Eliahu, 61
Cassis, Raúl, 2855
Caster, Kenneth C., 781
Castro, Bertrand, 1177, 1915
Cavalla, David, 1883
Cavalleri, Bruno, 1353
Chakraborti, Asit K., 2109
Chakraborti, Prabir C., 2109
Chakravarty, Jyotirmoy, 2109
Chambers, Richard D., 763
Chaney, Brian D., 1063
Chapleur, Yves, 661
Chen, Ih-Sheng, 671, 2415
Cheung, H. T. Andrew, 169, 2109
Chiba, Takuo, 1845
Chiesa, Anna, 2625
Chihiro, Masatoshi, 1331
Chikashita, Hidenori, 699
Chimichi, Stefano, 1005
Chiong, Evaristo, 1479
Cho, Jin-Ho, 1307
Cholerton, Trevor J., 951
Chrystal, Ewan J. T., 2235, 2505
Chuang, Kuang-Sein, 977
Cinotti, Angela, 1833
Cirrincione, Girolamo, 1959, 2855
Claramunt, Rosa Ma., 1853
Clarke, Trafford, 131

Clegg, William, 1609, 2109
Coe, Paul L., 2317
Collado, Isidro G., 1641
Colonna, Stefano, 71
Conant, Robert, 423, 1165, 1757, 2411
Conner, Anthony H., 1875
Connor, Joseph A., 619
Cook, Stuart, 1825
Coote, Steven J., 689
Corbett, David F., 2009
Cori, Osvaldo, 1479
Cornelisse, Jan, 15
Cornford, Julia L., 2743
Cornforth, Sir John, 851, 859, 867, 871
Coster, Ronald D., 1521
Costisella, Burkhard, 2469
Cowan, James A., 2395
Crombie, Leslie, 317, 333, 345,
353, 1421, 2775, 2783
Crosby, John, 607
Cross, Richard, 2593
Cruse, William B., 1883
D'Auria, Maurizio, 1777
D'Onofrio, Franco, 1777
Daley, Stephen T. A. K., 203, 207
Danieli, Bruno, 155
Dasgupta, Rupak, 2109
Dattolo, Gaetano, 1959, 2855
Davies, H. Geoff, 85, 903
Davies, John S., 1107
Davies, Stephen G., 489, 689, 1805, 2597
Dawes, Helen M., 1959, 2855
Dawson, Michael J., 903
De Clercq, Erik, 457
de Jesus, Amelia E., 2253
de Pava, Orso Vajna, 1607
de Vega, Ma. Jesús Pérez, 1853, 2667
Demir, Türsen, 1547
Denney, Ronald C., 1049
Devlin, John, 1515
Dhanak, Dashyant, 2829
Dho, Jonathan C., 1785
Diánez, Maria J., 581
Dickinson, Julia M., 1987
Dicks, Patrick F., 1243
Dillen, Jan L. M., 2659
Dimsdale, Michael J., 439
Djerassi, Carl, 1283, 1291, 1307
Dmowski, Wojciech, 2119
Dombi, György, 909
Donnelly, Dervilla M. X., 1869, 2719
Dorme, Régine, 1861
Drew, Michael G. B., 1147
Drewes, Siegfried E., 2809
Drewniak, Malgorzata, 2539
Duncan, Michael P., 559, 1781
Dunn, Peter J., 1579, 1585, 2109
Dupplin, Viscount, 639
Dutta, Anand S., 111
Easton, Robert J. C., 489
Edgar, Alan R., 2371
Edmonds, John S., 577
Eguchi, Shoji, 1171
Eickhoff, David J., 1485
Ejiri, Emiko, 831, 1505

Elall, Eatedal H. M. Abd, 2729
Elguero, José, 1853
Ephraim-Bassey, Hogan, 2475
Evans, Andrew R., 567, 1635
Evans, Elizabeth H., 137
Evans, Michael B., 951
Faizi, Shaheen, 1429
Falshaw, Christopher P., 2593
Fañanás, Francisco J., 2605
Ferao, Alicia, 2667
Ferguson, George, 169
Ferguson, J. A. K. Jamie, 2091
Ferraboschi, Patrizia, 1743, 1749, 2301
Ferraccioli, Raffaella, 515, 2631
Ferrari, Pietro, 2103
Ferreira, Daneel, 1081, 1705, 2345, 2353
Fiaschi, Rita, 2565
Fiecchi, Alberto, 1743, 1749, 2753
Finch, Stephen C., 45
Finet, Jean-Pierre, 241, 251
Fischer, Peter M., 475
Fishman, Andrew G., 1189
Fleet, George W. J., 1785
Fleming, Ian, 2259, 2269
Floor, Jan, 37, 1377
Foces-Foces, Ma. de la Concepción, 1853
Font-Altaba, Manuel, 2749
Fookes, Christopher J. R., 1667, 2027
Fornals, David, 2749
Forrester, Alexander R., 945
Foster, Richard W. G., 2653
Foubister, Alan J., 547, 553, 557
Fourrey, Jean-Louis, 1841
Fox, Christina M. J., 121
Fraga, Braulio M., 1955
Fransson, Bengt, 529
Franzén, Henry M., 2241
Fraser, Alison M., 105, 949
Freeman, Sally, 1399
Freer, Andrew A., 2069
Freer, Isabel, 2427
Fülöp, Ferenc, 909
Fuji, Kaoru, 1043
Fujii, Kyoichi, 1255, 1433
Fujii, Shinichiro, 313
Fujimoto, Mayumi, 1043
Fujimoto, Tetsuya, 1537
Fujinami, Tatsuo, 1473
Fujisaki, Fumiko, 313
Fujisawa, Masaru, 2523
Fujita, Tetsuro, 2403
Fukumoto, Keiichiro, 993, 1331, 1719, 1727, 2491
Fukuzawa, Shin-ichi, 1473
Funnell, Richard A., 2311
Furber, Mark, 1573
Gainsford, Graeme J., 1817
Galán, José, 581
Gallego, Mar G., 2663
Gamlath, Cha B., 2849
Garanti, Luisa, 1533
Garcia-Granados, Andrés, 471
Garegg, Per J., 1269
Garry, Scott W., 601
Gavin, José A., 471
Gdaniec, Maria, 1033
Ghatak, Usha Ranjan, 1263, 2109 ,
Ghiringhelli, Dario, 1607
Giacomini, Daria, 2637
Giannotti, Charles, 241
Gibson, Danuta, 619
Gigg, Jill, 423, 1165, 1757, 2411
Gigg, Roy, 423, 1165, 1757, 2411

Gilbert, Andrew, 1147
Gilchrist, Thomas L., 225, 2235,
2505, 2511, 2517
Giles, Michael B., 111
Gillies, Iain, 1049
Gilpin, Martin L., 1369
Giomi, Donatella, 1005
Giorgianni, Patrizia, 2643, 2647
Glidewell, Christopher, 507
Glover, Stephen A., 1243
Gómez-Sánchez, Antonio, 581
Goberdhan, Dhanesh G. C., 639
González-Collado, Isidro, 1955
González Ortega, Alfonso, 2125
Goodfellow, Craig L., 1805
Goodwin, Christopher J., 2597
Goosen, André, 1243
Gormley, James J., 111
Gorst-Allman, Charles P., 163
Goto, Naomi, 2531
Grayson, J. Ian, 967
Graziano, M. Liliana, 1833
Greeves, Nicholas, 2569
Grehn, Leif, 529
Greig, Derek J., 607
Griffin, Roger J., 2217, 2229
Grigg, Ronald, 1515, 2275, 2285
Grimshire, Michael J., 1135
Grisenti, Paride, 1743, 1749, 2301
Groß, Hans, 2469
Guest, Angela W., 45
Gullotti, Michele, 71
Gunaherath, Kamal B., 2849
Gunaratne, H. Q. Nimal, 2285
Gunatilaka, A. A. Leslie, 2849
Haas, Alois, 2119
Habib-ur-Rehman, , 1701
Hall, D. Muriel, 1763
Halley, Frank, 241
Hamilton, Douglas G., 607
Hamzetash, Dariush, 1383
Hanaoka, Miyoji, 677
Hanna, Roderick, 2421
Hansel, Rudolf, 717
Hanson, James R., 1987, 1991
Hanuš, Vladimir, 563
Harada, Kazuo, 1495
Harayama, Takashi, 75
Harbridge, John B., 1369
Harger, Martin J. P., 683, 1399
Haromy, Tuli, 1975
Harrington, Frank P., 635, 1873
Harris, Martin, 1599
Harrison, John M., 21
Harrison, Peter J., 1667
Harusawa, Shinya, 1771
Hashimoto, Yoshinobu, 2531
Haslam, Edwin, 2765
Hatanaka, Hidekatsu, 623
Hayama, Naomi, 1697
Haywood, Phillip A., 951
Heatley, Frank, 1599
Heitz, Annie, 1915
Hemingway, Richard W., 465, 1875
Henderson, Douglas, 1825
Herbert, Richard B., 1593
Herbert, Richard H., 1123
Hermecz, István, 909
Hernández, Melchor G., 1955
Hernández, Rosendo, 937
Hewitt, Brian D., 2371
Hewson, Alan T., 137
Hickey, Deirdre M. B., 921
Hida, Mitsuhiko, 481
Hideg, Kálmán, 1117
Higashiyama, Tatsuo, 1697
Hill, Robert A., 2209

Hirai, Jun-ichi, 1771
Hirata, Yoshimasa, 173
Hiratake, Jun, 1053
Hirooka, Shuji, 831
Hiroya, Kou, 2491
Hitchcock, Peter B., 851, 1987, 1991
Holdup, David W., 2455
Horak, R. Marthinus, 2253
Hori, Mikio, 187, 1211, 2531
Horspool, William M., 743, 2663
Hosoya, Ken, 1799
Howard, Judith A. K., 2443
Howard, Tina D., 2743
Howarth, Oliver W., 1657
Howarth, T. Trefor, 1369
Howden, Merlin E. H., 475
Huaun-Yong, Hwang, 1763
Huber, Imre, 909
Hudson, Neale A., 2809
Hughes, Deborah, 2505
Hughes, Neil A., 1413, 2061
Huguenin, Lynn M., 871
Hunter, William H., 707
Hursthouse, Michael B., 1959, 2855
Hussain, Helmi H., 1609, 2109
Hutchison, H. Susan, 1407
Ichihara, Teruyoshi, 2403
Iddon, Brian, 1437, 1445, 1453, 1457
Idemoto, Tohru, 1511
Iesce, M. Rosaria, 1833
Igner, Eva, 2447
Ihara, Masataka, 1331, 1719
Ikeda, Masazumi, 589, 1095, 1099
Ila, Hiriyakkanavar, 1945
Imai, Eiji, 1211, 2531
Imam, Syed H., 2653
Inagaki, Minoru, 1053
Inagaki, Satoshi, 2531
Inch, Thomas D., 21
Inoue, Seiichi, 1753
Insole, Joan M., 1763
Irie, Maki, 1095
Irie, Michiko, 313
Ishibashi, Hiroyuki, 589, 1095, 1099
Ishii, Hisashi, 671, 2415
Ishii, Keitaro, 1937
Ishikawa, Masanori, 481
Ishikawa, Tsutomu, 671, 2415
Ishiyama, Ko-ichi, 1099
Ishizaka, Shuichi, 1505
Itano, Harvey A., 1183
Ito, Masae, 1095
Itoh, Kazuyoshi, 699
Itzhak, Norbert, 1979
Iwachido, Tadashi, 1697
Izawa, Yasuji, 645, 1951
Jackson, Anthony H., 265, 277, 287, 299, 307, 2543
Jackson, David A., 2437
Jans, Arnold W. H., 15
Jansson, Per-Erik, 377
Jarman, Michael, 1129
Jenkins, Ian D., 2057
Jerina, Donald M., 369
Jigajinni, Veerappa B., 2377
Johnston, David, 495
Johnstone, Robert A. W., 1069
Jones, A. Stanley, 457, 1325, 2317
Jones, Gurnos, 1865
Jones, Keith, 537
Jones, R. Alan, 1959, 2855
Jones, Raymond C. F., 317, 333, 345, 353, 1421

Jones, Richard H., 489, 2305
Jones, Terence R., 2585
Jouin, Patrick, 1177
Joule, John A., 1599
Joyeau, Roger, 1899
Junjappa, Hiriyakkanavar, 1945
Kabir, Abul K. M. S., 2421
Kabiraj, Apurba, 2109
Kaji, Aritsune, 825, 1799, 1929
Kametani, Tetsuji, 993, 1331,
1719, 1727, 2491
Kamimura, Akio, 1929
Kamiyama, Akiko, 1845
Kandeel, Kamal A., 2023
Kaneko, Chikara, 1845
Kaneko, Yoshihiro, 645
Kashima, Choji, 1495
Katakai, Ryoichi, 2249
Kataoka, Tadashi, 187, 1211, 2531
Katayama, Atsuhiko, 1511
Katayama, Sadamu, 389, 395
Kato, Tadahito, 831, 1505
Katritzky, Alan R., 769, 775,
781, 791, 799, 805, 811, 819, 2539, 2673
Kaura, Arun C., 45, 2009
Kawabata, Takeo, 1043
Kawachi, Masanori, 1211
Kawaguchi, Akihiro, 1331, 1719
Kawahara, Nobuo, 2099
Kawai, Ken-ichi, 1735, 2099
Kay, Paul B., 1813
Kelly, David J., 2475
Kelly, Henry A., 177, 2195
Kemp, James, 2275, 2285
Kenne, Lennart, 377
Kennedy, Deirdre A., 369
Kennedy, Michael, 1395
Keukeleire, Denis De, 2715
Khan, Munir I., 2265
Khan, Nazir, 1437, 1445, 1453, 1457
Khanna, Rajinda N., 1821
Kidd, Timothy R., 2305
Kido, Masaru, 2531
Kikukawa, Kiyoshi, 1511
Kim, Ryungsoon S., 1361
Kimura, Kazuhiko, 2531
King, Frank D., 2511, 2517
Kirihara, Tomoko, 1719
Kirk, David N., 1339, 1343
Knight, David W., 265
Knight, Derek J., 2149, 2701, 2707
Knight, John, 1237
Kobayashi, Jun'ichi, 173
Kobayashi, Nobuyuki, 677
Kobayashi, Tohru, 1753
Kočovský, Pavel, 1969
Kocieński, Philip J., 2171, 2183, 2189
Koizumi, Toru, 2203
Komatsu, Hironori, 2491
Konakahara, Takeo, 1489
Kono, Kiyoshi, 1511
Konya, Naoto, 825
Kotali, Elvira, 2759
Koyama, Kikuhiko, 57
Koziol, Anna E., 2673
Kumar, Anil, 445
Kumar, Ashok, 851, 859
Kumar, Subodh, 261
Kumar, V. P. Sashi, 1361
Kunec, Ellen K., 1089
Kuratani, Kazuyoshi, 1211
Kurihara, Takushi, 1771
Kuroda, Reiko, 1527
Kuroda, Shigeyasu, 831, 1505

Kurotaki, Ayako, 91
Kusano, Genziro, 2403
Kusner. Edward J., 111
Kutschabsky, Leo, 2111
Kuzmierkiewicz, Wojciech, 811, 819, 2673
Kyte, Andrew B., 1921
Laali, Khosrow, 2049
Labarca, Carmen V., 927
LaBella, Frank S., 1361
Laks, Peter E., 465, 1875
Lam, Jamshed N., 775
Langa, Fernando, 743
Lash, Timothy D., 265, 287
Latrofa, Andrea, 1027
Laugier, J., 1077
Law, Kam Wah, 781
Lawrence, Gordon C., 903
Lawton, Geoffrey, 877, 885, 899
Layden, Keith, 2765
Långström, Bengt, 2241
Le-Nguyen, Dung, 1915
Leaver, Jeff, 903
Lecea, Begoña, 845
Lee, Gary C. M., 2321
Lee, S. Mark, 2109
Lee, Thomas V., 759
Leeper, Finian J., 1689, 2027
Leibnitz, Peter, 2111
Leighton, Philip, 2385
Lenzi, Alberto, 2643
Lesma, Giordano, 155
Lewer, Paul, 753
Lewis, Wynn, 717
Lex, László, 1117
Ley, Steven V., 121, 131
Liapis, Maria, 987
Ligali-Ali, Mamoudou, 1421
Liguori, Angelo, 961
Lim, Bee Lan, 1437, 1457
Lin, Peter, 2701, 2707
Linz, Gary S., 2809
Liso, Gaetano, 1027
López-Castro, Amparo, 581
London, A. Martin, 2775
Luis, Francisco R., 1641
Lyall, William J. S., 595
Lyons, Jacqueline J., 649
Macías, Francisco A., 1641
Macaulay, Graham S., 2209
Maccagnani, Gaetano, 2643
Macciantelli, Dante, 2643
Machida, Hideaki, 1909
MacKenzie, A. Roderick, 921, 927
MacLachlan, William S., 2209
Maeda, Hiroshi, 1099
Maeda, Mitsuaki, 2141
Maeda, Munenori, 57
Mahato, Shashi B., 629, 1963
Mahmood, Tariq, 1429
Mahni, Fatma, 781
Maillo, Maria Aracelis, 2137
Mallams, Alan K., 1189
Malone, John F., 369
Manabe, Osamu, 449, 2297
Manfredi, Amedea, 71
Manimaran, Thankiavelu, 2163
Mann, John, 385, 1657
Mann, Jonathan, 1593
Mann, Stephen, 2497
Manzocchi, Ada, 2753
Marais, Pierre C., 1553
March, Lorraine A., 137
Marples, Brian A., 2653
Marsili, Antonio, 2565
Martínez, Antonio, 471
Martelli, Giorgio, 2637
Martin-Smith, Michael, 951

Martin, Gary E., 2839
Martin, Juan-Antonio
Fernandez, 743
Martin, Russell, 1635
Martin, Stephen J., 181
Martinez-Gallo, José M., 1017, 2605
Maskill, H., 1739
Mason, Ralph, 2569
Massanet, Guillermo M., 1641
Masuda, Takeshi, 2415
Matlin, Albert R., 365
Matsuda, Tsutomu, 1511
Matsuki, Masayuki, 1489
Matsumoto, Yukiharu, 1211
Matsushita, Hitoshi, 187
Matsuzaki, Kei, 1537
Mattay, Jochen, 15, 2333
Matthews, Ian, 2839
Matthews, Rll S., 1485
Maycock, Christopher D., 1221, 2009
Mazzanti, Germana, 2647
McCague, Raymond, 1011, 1129
McChesney, Michael M., 2109
McClean, Michael J., 457
McCleland, Cedric W., 1243
McColl, Ian S., 1147
McNab, Hamish, 649, 653, 657, 1407
McPherson, Michael, 607
Mészáros, Zoltán, 909
Meakins, G. Denis, 639, 1153, 2305, 2311
Mechoulam, Raphael, 1423
Mellor, John M., 2729, 2737
Merlini, Lucio, 571
Meth-Cohn, Otto, 1553, 2659
Mibu, Nobuko, 313
Mico, Antonella De, 1777
Middlemiss, David, 689
Milburn, Peter J., 2765
Mills, Owen S., 1599
Milner, Peter H., 45
Mitani, Michiharu, 57
Mitchell, Glynn, 403, 413
Miura, Masahiro, 1021, 1259
Miyake, Hideyoshi, 1929
Miyamoto, Yoshiko, 1567
Miyano, Seiji, 313
Miyazaki, Kiminori, 449
Miyazaki, Makoto, 699
Mobbs, Bryan E., 2597
Mohamed, Salah E. N., 431
Moizumi, Mari, 1727
Mojarred, Fatemeh, 1865
Molina, Pedro, 1853, 2667
Montevecchi, P. Carlo, 2815
Montevecchi, Pier Carlo, 99
Moody, Christopher J., 877, 885 , 899, 913, 921, 927, 931. 1389, 1395
Moore, Douglas E., 1817
Moriarty, Robert, 559
Moriarty, Robert M., 1781
Morissette, David G., 9
Morita, Kenji, 2415
Morita, Masatoshi, 577
Moriyama, Keiko, 1501
Morlacchi, Flaviano, 1027
Morris, Deborah, 2505
Morris, Janet L., 211, 217
Motherwell, William B., 251
Mouat, Deborah J., 1865
Mukai, Chisato, 677
Murata, Satoru, 1259
Murphy, Francis G., 2719
Nájera, Carmen, 1017, 2605
Nagai, Mitsuo, 1727

Nagata, Kazuhiro, 2203
Nakajima, Shoichi, 1735, 2099
Nakamura, Hideshi, 173
Nakamura, Mitsunobu, 831
Nakano, Tatsuhiko, 2137
Nakao, Kenji, 1255, 1433
Nakatani, Hiroshi, 589
Napolitano, Elio, 2565
Nasini, Gianluca, 571, 1353
Naylor, Alan, 689
Någren, Kjell, 2241
Neilson, Douglas G., 601
Nemoto, Hideo, 1727
Nesi, Rodolfo, 1005
Newton, Roger F., 1921
Nicotra, Francesco, 1319
Nisato, Dino, 1177
Nishio, Takehiki, 2523
Nishio, Takehiko, 1225, 2611
Nivard, Rutger J. F., 2473
Node, Manabu, 1043
Nomoto, Tateo, 645, 1951
Nomura, Masakatsu, 1021, 1259
Nowell, Ian W., 137
Nozawa, Koohei, 1735, 2099
O'Kane, Gerard A., 369
O'Mahony, Mary J., 1613, 1623
O'Reilly, Joseph, 1869
O'Shea, Paul D., 1039
Oda, Jun'ichi, 1053
Ogasawara, Kunio, 91
Ogura, Haruo, 1211
Ohizumi, Yasushi, 173
Ohmoto, Tatsuya, 2845
Ohta, Kazuchika, 1537
Ohta, Shinji, 2845
Ohue, Yoshihiko, 1247
Ojima, Jūro, 831, 1505
Oliver, Joel D., 1485
Omote, Yoshimori, 1495, 2523, 2611
Ono, Noboru, 1929
Onorato, M. Esther, 471
Ookawa, Atsuhiro, 1465
Orito, Kazuhiko, 1247
Ośmiałowski, Krzysztof, 1033
Ota, Tomomi, 1753
Ottenheijm, Harry C. J., 2473, 2481
Overton, Karl H., 2427
Owens, Ken A., 1921
Ozawa, Kimio, 1753
Pagani, Giorgio A., 515, 2631
Pal, Bikas C., 629, 1963
Palenik, Gus J., 2673
Palmer, Christopher J., 317, 333, 345, 353, 1421
Palmisano, Giovanni, 155
Palomo, Claudio, 845
Pandey, Ravindra K., 299, 1229
Panunzio, Mauro, 2637
Panza, Luigi, 1319, 2745
Pardasani, Pushpa, 717
Parratt, Martin J., 181
Parsons, Philip J., 1237
Patel, Kundan, 61
Paton, R. Michael, 607, 2339
Payne, Sheila, 423, 1165, 1757, 2411
Paynter, Oliver I., 2447
Peach, Josephine M., 1785, 2311
Pearson, Christopher J., 877, 885, 899
Pearson, Michael J., 45
Pearson, Neil D., 1541
Pedrosa, Rafael, 2125
Pelter, Andrew, 717
Perales, Aureo A., 1955
Perez-Ossorio, Rafael, 743

Pericàs, Miquel A., 2749
Perveen, Shahnaz, 1701
Pettersen, Roger C., 1975
Piancatelli, Giovanni, 1777
Piccirilli, Joseph A., 15
Pichon, Clotilde, 251
Picken, Douglas, 2427
Pietrzak, Barbara, 385
Pinder, A. Reginald, 747
Pinhey, John T., 2689, 2695
Pinto, B. Mario, 9
Plackett, Simon J., 1153
Plate, Ralf, 2473, 2481
Plevey, Raymond G., 2129
Polonsky, Judith, 1869, 2179
Ponsford, Roger J., 45
Portilla, Gloria, 1479
Prajapati, Dipak, 1995
Prakash, Om, 559, 1781
Prangé, Thierry, 2719
Prasitpan, Noojaree, 2543
Pratt, Albert C., 359
Price, Peter J., 1069
Price, Raymond, 619
Price, Susan J., 1153, 2311
Proença, M. Fernando J. R. P., 1521
Proudfoot, John R., 1283
Prout, Keith, 1785, 2305
Puar, Mohindar S., 1189
Purushotham, Vemeshetti, 945
Rachwal, Bogumila, 791, 799, 805, 811
Rachwal, Stanislaw, 781, 791, 799, 805, 811
Ragnarsson, Ulf, 529, 2241
Ragoussis, Nikitas, 987
Ragoussis, Valentine, 987
Rahman, Shahzad S., 85
Rajagopalan, Maruthin S., 1339, 1343
Ramakrishnan, Vayalakkavoor T., 2163

Ramasubbu, Ashok, 1515
Ramer, Wolfgang H., 775
Rao, Erraguntla Venkata, 2723
Rao, K. R. Nagaraja, 307
Rees, Charles W., 203, 207, 211, 217, 403, 413, 921, 927, 931,
$1159,1389,1395,1579,1585$, 2109
Reese, Colin B., 1527, 2829
Regberg, Tor, 1269
Reho, Antonia, 1027
Rey, P., 1077
Richards, Trevor I., 2765
Richardson, Kevan A., 1825
Rico, Manuel, 581
Riva, Renata, 155
Rizzacasa, Mark A., 2017
Roberts, Stanley M., 85, 903
Robertson, Alan D., 867
Robins, David J., 105, 177, 949, 1089, 2069, 2195
Robinson, Brian, 2265
Robinson, John A., 27
Rogers, Vernon, 1347
Rojas, Anibal, 2137
Rojas, M. Cecilia, 1479
Ronchetti, Fiamma, 1319, 2745
Rose, Francis L., 2585
Rossman, Randall R., 1189
Roux, David G., 1705, 2345, 2353
Rowley, Michael, 2259
Rubio, Olga, 781
Ruiz, José R., 955
Runsink, Jan, 15, 2333
Russell, Simon T., 2701

\author{

}
79

$+$<br>

$\qquad$






45

$\qquad$


#  

1339


$\square$

號

```
教
```

$\qquad$


Russo, Giovanni, 1319, 2745
Ryan, Anna P., 2783
Rycroft, David S., 2427
Ryder, David J., 287
SKet, Boris, 981
Sączewski, Franciszek, 1033
Saha, Bijali, 1263
Saito, Setsuo, 1183
Sakai, Mitsuru, 1567
Sakai, Shizuyoshi, 1473
Sakaki, Jun-ichi, 1845
Sakamoto, Masanori, 1937
Salt, W. G., 2819
Sammes, Peter G., 195
Sampson, Paul, 2129
Sanders, Jeremy K. M., 2385, 2395
Sandhu, Jagir S., 1995
Sanghvi, Yogesh S., 1527
Sannicolò, Franco, 2631
Santaniello, Enzo, 61, 1743,
1749, 2301, 2753
Santi, Daniel V., 2141
Sargent, Melvyn V., 231, 2017, 2553
Sarti-Fantoni, Piero, 1005
Sasaki, Tadashi, 1171
Sato, Kenji, 1489
Sato, Kenzi, 623
Sato, Kikumasa, 1753
Sato, Masayuki, 1845
Sato, Tatsunori, 1095
Sato, Tomohiro, 1713
Satyanarayana, Gutta O. S. V., 1263
Saunders, John, 1825
Savin, John, 2775
Saxton, J. Edwin, 2079
Scarpati, Rachele, 1833
Schick, Hans, 2469
Schierhorn, Angelika, 2111
Scholz, Mónica, 2855
Schwarz, Sigfrid, 2469
Schweda, Elke, 377
Scott, Ronald M., 1515
Sefton, Mark A., 37
Seiber, James N., 2109
Selva, Enrico, 2103
Seo, Shujiro, 1713
Serratosa, Fèlix, 2749
Seyea, Hideyuki, 1735
Seymour, Patricia F., 169
Sha, Chin-Kang, 977
Shannon, Patrick V. R., 2543
Sharma, Pavan K., 1821
Sharma, Rajiv, 2361
Sharples, Derek, 2743
Shaw, Mark J., 2265
Shaw, Robert A., 1547
Shelly, Declan P., 1039
Sheng, Zhi-Chu, 1667
Shepherd, Michael K., 1561, 2443
Shepherd, Robin G., 2153
Shepherd, Thomas, 495, 501, 507
Sheradsky, Tuvia, 1979
Sheridan, M. Helen, 1869
Shibata, Yasuyuki, 577
Shibutani, Mitsuo, 831
Shimada, Ken-ichi, 677
Shimizu, Hiroshi, 187, 1211, 2531
Shingu, Tetsuro, 2403
Shinkai, Seiji, 449, 2297
Shinohara, Masato, 1021
Shiraiwa, Yasunao, 1505
Shishido, Kozo, 993, 2491
Shu, Arthur Y. L., 1291

Siddiqui, Bina S., 1429
Siddiqui, Salimuzzaman, 1429
Simmonds, Derek J., 2447
Sindona, Giovanni, 961
Singh, Gurdeep, 1945
Singh, Gurdial, 2377
Singh, Harjit, 261
Singh, Sheo Bux, 2427
Skarjune, Robert, 2673
Slater, Martin J., 457, 1325
Smale, Terence C., 45
Smith, Adrian, 683
Smith, David I., 1159
Smith, David M., 495, 501, 507
Smith, Donald C. C., 2437
Smith, Keith, 2839
Smith, Kevin M., 299, 1229
Smith, Paul W., 1785
Smits, Jan M. M., 2481
Soai, Kenso, 1465, 1909
Sohár, Pál, 237
Solans, Xavier, 2749
Sonobe, Yumi, 2141
Spadoni, Massimo, 71
Spagnolo, Piero, 99, 2815
Spinelli, Guido, 2565
Srebnik, Morris, 1423
Sridharan, Visuvanathar, 2285
Stájer, Géza, 237
Stanford, John E., 225
Stasi, Francesca, 1027
Stawinski, Jacek, 1269
Stec, Wojciech J., 1645
Stephens, Richard L., 1189
Stephenson, Gerald F., 439
Stevens, Malcolm F. G., 665, 2217, 2229
Stevenson, Paul, 1515
Steyn, Pieter S., 163, 2253
Steynberg, Jan P., 1705
Stieborová, Irena, 1969
Stoodley, Richard J., 2009, 2361
Strange, Philip G., 1825
Street, Jonathan D., 1599
Street, Stephen D. A., 2171, 2183, 2189
Stretch, Wayne, 2235, 2505
Stribling, Donald, 547
Strickland, Larry C., 1485
Stringer, Andrew M., 2443
Strömberg, Roger, 1269
Stuart, Alan S., 851, 859
Stubbings, George W. F., 2653
Stud, Manfred, 955
Suárez, Ernesto, 937
Suckling, Colin J., 595
Suckling, Keith E., 595
Suga, Takayuki, 2845
Sugimoto, Shinji, 1489
Suginome, Hiroshi, 1247
Sukegawa, Yuko, 993
Sumoto, Kunihiro, 313
Sundaralingam, Muttaiya, 1975
Supphayen, Damrus, 277
Sutherland, Ian O., 1921
Sutherland, James K., 445
Sutton, Kevin H., 489, 1805
Suzuki, Narumi, 1567
Suzuki, Nobutaka, 645, 1951
Světlik, Jan, 563
Swain, Christopher J., 1613, 1623
Szabó, Angela E., 237
Szczesniak, Marian, 2673
Tadayoni, Rahim, 2073
Taga, Tooru, 75
Takagi, Kentaro, 1697
Takahashi, Michiyasu, 91

Takahashi, Takumi, 1845
Takahata, Hiroki, 1501
Takaishi, Yoshihisa, 2403
Takaki, Ken, 2269
Takano, Seiichi, 91
Takayanagi, Hiroaki, 1211
Takeda, Hideya, 1505
Takeda, Ken'ichi, 1713
Takeda, Yoshio, 2403
Takeuchi, Hiroshi, 57
Takeuchi, Hisato, 1171
Takeuchi, Tatsuo, 481
Takeuchi, Tsuneo, 481
Takeuchi, Yoshio, 2203
Tamura, Tadashi, 825
Tamura, Yasumitsu, 1099
Tanaka, Kiyomi, 2531
Tanikaga, Rikuhei, 825, 1799
Tapia, Ricardo, 2855
Tashiro, Masashi, 1
Tateno, Hideo, 623
Taylor, Brian F., 2593
Taylor, Giles A., 567, 1635, 2593
Taylor, Richard J. K., 1573, 1825
Tazaki, Michiko, 1753
Tedeschi, Piero, 1005
Tellado, Fernando G., 1955
Templeton, John F., 1361
Tendler, Saul J. B., 2617
Terao, Keiji, 1059
Tezuka, Yasuhiro, 75
Thakker, Dhiren T., 369
Theil, Fritz, 2469
Thomas, Andrew P., 2269
Thomas, Philip, 431
Thompson, David, 495
Thompson, David J., 445
Thomson, Julie, 811
Thomson, Ronald H., 1821
Threadgill, Michael D., 2229, 2617
Tilstam, Ulf, 519
Tinker, Alan C., 2543
Tisdale, Michael J., 2617
Törnroos, Karl-Wilhelm, 519
Toczek, Judy, 759
Todoroki, Toshiharu, 389
Tojo, Gabriel, 931
Toma, Lucio, 1319, 2745
Tomioka, Hideo, 645, 1951
Toshimitsu, Akio, 1059
Trapani, Giuseppe, 1027
Trave, Roberto, 1533
Treadgold, Richard C., 1107
Tremeer, E. John, 1107
Trippett, Stuart, 1813
Tsiamis, Chris, 695
Tsoungas, Petros G., 695
Tsubaki, Takayuki, 2297
Tsuboi, Aki, 151
Tsukube, Hiroshi, 1697
Tsuruta, Mayumi, 1719
Tsuruta, Takuya, 1473
Tughan, Gary, 2787, 2797, 2803
Tundo, Pietro, 713, 21 57, 2159
Tupper, David E., 707
Tureček, František, 563
Turner, David L., 27
Turner, Michael K., 903
Uccella, Nicola, 961
Udagawa, Shun-ichi, 1735
Ueda, Hitoshi, 1331
Ueki, Satoshi, 2415
Uemura, Sakae, 1059
Ugo, Renato, 2625
Umei, Yoshizumi, 589
Uomori, Atsuko, 1713
Uzar, Horst C., 1689

Valderrama, Jaime, A., 2855
Vallés, Maria Asunción, 1383
van Vurren, Gerda, 2659
von Itztein, Mark, 2057
von Rosenberg, Joseph L., 747
Vaquero, Juan J., 927, 1395
Varvoglis, Anastassios, 2759
Vazquez de Miguel, Luis M., 769
Venkataratnam, G., 2723
Venturello, Paolo, 713, 2157, 2159
Vernon, John M., 2023
Verzele, Maurice, 2715
Vicente, Martina, 2125
Vilain, C., 2723
Vinaixa, Jordi, 2749
Vleggaar, Robert, 2253
Wada, Fumio, 1511
Wada, Masanoir, 151
Wadsworth, Alan H., 137
Wakefield, Basil J., 85, 903
Wakselman, Claude, 1861
Wakselman, Michel, 1899
Walker, Jonathan C., 489
Walker, Nigel P. C., 1763
Walker, Richard T., 457, 1325, 2317
Wall, Wilfred F., 903
Walsh, E. Brian, 1657
Waltho, Jonathan P., 2103
Ward, James F., 1485
Warminski, Edward E., 2765
Warnock, William J., 2275
Warrellow, Graham J., 913
Warren, Stuart, 967, 1883, 2569, 2579
Wasson, Robert C., 2511, 2517
Watanabe, Koichi, 1951
Watanabe, Masataka, 1793, 2833
Watanabe, Toshio, 389, 395
Wataya, Yusuke, 2141
Watson, Graham M., 2681
Watson, Thomas R., 169, 2109
Watt, C. Ian F., 2437
Wawrynko, Krystyna, 715
Webb, Graham A., 2073
Weber, Gabi, 2333
Westwood, Steven W., 1679
Wey, Shiow-Jyi, 977
Whitby, Richard J., 195
White, Alan C., 2153
Whitham, Gordon H., 2149, 2701, 2707
Whiting, Andrew, 2361
Whiting, Donald A., 431, 2775, 2783
Whiting, Mark C., 2447, 2455, 2475
Whittaker, Ian C., 2593
Wightman, Richard H., 2377
Wilkins, Brian J., 1817
Wilkins, Martyn, 307
Williams, David J., 885
Williams, Dudley H., 2103
Williams, Jonathan G., 2149
Williams, Joseph C., 111
Williams, Nancy, 21
Wilson, John R. H., 871
Winders, John A., 85, 903
Wong, Sang K., 2229
Wood, William W., 537, 2681
Wootton, Gordon, 2511, 2517
Wright, Brian, 553, 557
Yadav, Lal D. S., 1899
Yagi, Haruhiko, 369
Yamaizumi, Ziro, 2141
Yamamoto, Hiroyuki, 613
Yamamoto, Iwao, 1537
Yamamoto, Wako, 589
Yamamoto, Yukio, 1053
Yamato, Takehiko, 1
Yamauchi, Masashige, 389, 395
Yamauchi, Takayoshi, 1255,
1433
Yamazaki, Chiji, 1567
Yamazaki, Masuo, 481
Yamazaki, Takao, 1501
Yannakopoulou, Konstantina,
2673
Yap, C. H. Maurice, 1635
Yeates, Clive, 2171, 2183,2189
Yeboah, Samuel O., 2783
Yianni, Paul, 1147
Yokota, Noriko, 1909
Yokoyama, Masataka, 623

Yuan, Chun Wei, 1841
Yus, Miguel, 1017, 2605
Zani, Paolo, 2647
Zaslona, Alex T., 967
Zecchi, Gaetano, 399, 1533
Zinkel, Duane F., 1975
Zupan, Marko, 981
Zupančič, Nataša, 981

Yamazaki, Takao, 1501
poulou, Konstantina
Yap, C. H. Maurice, 1635
Yeates, Clive, 2171, 2183, 2189
Yeboah, Samuel O., 2783
Yokota, Noriko, 1909
Yokoyama, Masataka, 623
Yona, Irene, 1423
Yoneda, Fumio, 75
Yoneda, Ryuji, 1771
Yoshida, Minako, 1099
Yoshikoshi, Akira, 1793, 2833
Yoshimura, Yohko, 1713
Young, Desmond A., 2345, 2353
Young, Esmé, 2345

Yona, Irene, 1423
Yoneda, Fumii, 1771
Yoshida, Minako, 1099
ra, 1793, 2833
Young, Desmond A., 2345, 2353
Young, Esmé, 2345

## AAPTAMINE

Aaptamines. Novel benzo[de][1,6]naphthyridines from the Okinawan marine sponge Aaptos aaptos, 173-6
AAPTOS AAPTOS
Aaptamines. Novel benzo[de][1,6]naphthyridines from the Okinawan marine sponge Aaptos aaptos, 173-6

## ACETAL

5-Thiopyranoses. Part 11. Isopropylidene acetals of 5-thio-Dglucose, 5 -thio-D-allose, and 5-thio-D-altrose and some of their methyl glycosides, 1413-20
Ketene $S, N$-acetals as synthetic intermediates for heterocycles. Reaction of ketene $S$. $N$-acetals with 1,4 -quinones, 1501 4
ACETOXYMETHYLATION
Structural studies on bioactive compounds. Part 7. The design and synthesis of $x$-substituted serines as prospective inhibitors of serine hydroxymethyltransferase., 2617-24

## ACETYLENE

The synthesis of diethyl $p$-tolylsulphonylethynylphosphonate and related acetylenes, and their reactions with nucleophiles, pyridinium-1-dicyanomethylides, and dienes, 1275-82
ACETYLENEDICARBOXYLATE
Interaction of thiophene S,N-ylides with dimethyl acetylenedicarboxylate, 2659-62
ACETYLENE ESTER
Reactions of tertiary allylamines with dimethyl acetylenedicarboxylate, 2023-6
ACHILLIN
Configuration of 1,10 -epoxyguaianolides: stereochemistry of $1,10-$ epoxy-8x-hydroxyachillin, 1641-4
ACRIDINE
Vinyl azides in heterocyclic synthesis. Part 7. Synthetic studies on the cytotoxic marine alkaloid amphimedine, 927-30

## ACRIDINETHIONE

Photochemical reactions of pyridine-4-thiones and acridine-9thiones with alkenes, 1225-8

## ACRYLAMIDE

Heteroatom rearrangements. Extension to aliphatic carboxylic acids, 623-8

## ACTINOPLANES

Structure elucidation of the macrocyclic antibiotic lipiarmycin, 1353-60
ACYLATION
Basic intramolecular acylation. Synthesis of 2-aryl-1-tetralones bearing isopropoxy or benzyloxy groups, synthetic key intermediates for phenolic antileukaemic benzo[c]phenanthridine alkaloids, from 2,4-diarylbutyric acid derivatives, 2415-20

## ACYL MIGRATION

Conformation dependent photochemistry of dienes. Substituent effects on the photochemical reactions of some 4-acyloxy-2-azabuta-1,3-dienes. 2663-6

## ADAMANTANE

Synthesis of $8,9,10,11,12,13,13 \mathrm{a}, 14$-octahydro-7,11; 9,13dimethanoazonino $[1,2-b]$ isoquinolin- $5(7 H)$-ones and some related derivatives by photocyclization reactions of 5-methylene-4-aroyl- and -acryloyl-4-azatricyclo [4.3.1.1 ${ }^{3,8}$ ]undecanes (4azahomoadamantanes), 1171-6
ADDITION
Synthesis of allyl and dienyl sulphones tia iodosulphonylation of conjugated dienes, 2605-10
ADDITION REACTION
Addition of arylsulphonylcarbenes to benzene, 715-6
ADHESIVE STUDIES
Synthesis and adhesive studies of marine polypeptides, 6138

## AFLATOXIN

Synthesis of model compounds of some biogenetic precursors of aflatoxin $\mathrm{B}_{1}, 163-8$
AICA RIBOSIDE
The conversion of the $2^{\prime}, 3^{\prime}-O$-isopropylidene derivative of 5 -amino-

1- $\beta$-D-ribofuranosylimidazole-4-carboxamide (AICA riboside) into $2^{\prime}, 3^{\prime}-O$-isopropylidene-isoguanosine, 1527-32

## ALBICANIC ACID

Synthesis and resolution of albicanic acid. Simple access to optically active drimane sesquiterpenes, 987-92

## ALBICANOL

Synthesis and resolution of albicanic acid. Simple access to optically active drimane sesquiterpenes, 987-92

## ALCOHOL

The chemistry of pentavalent organobismuth reagents. Part 8. Phenylation and oxidation of alcohols by tetraphenylbismuth esters, 251-60
Continuous conversion of alcohols into alkyl halides by gas-liquid phase-transfer catalysis (G.L.-P.T.C.), 2157-8

## ALDEHYDE

The chemistry of $N$-substituted benzotriazoles. Part 4. A novel and versatile method for the mono- N -alkylation of aromatic and heteroaromatic amines, 805-10

## ALDIMINE

Synthesis of 6,7 -dihydro- 5 H -1,2,4-triazolo[3,4-b][1,3,4]thiadiazines by a C-C ring cyclization under mild conditions, 185360

## ALDOL

A directed aldol approach to ( + )-milbemycin $\beta_{3}, 2171-82$
ALDOSTERONE

18-Substituted steroids. Part 13. Improved preparation of the metabolites of aldosterone reduced in ring A., 1343| met |
| :---: |
| 6 |

ALDOSTERONE SULPHATE
18-Substituted steroids. Part 12. Synthesis of aldosterone 21sulphate, and an improved general procedure for preparing steroid sulphates, $1339-42$

## ALKALOID

Application of ${ }^{2} \mathrm{H}$ n.m.r. spectroscopy to study the incorporation of enantiomeric ${ }^{2} \mathrm{H}$-labelled cadaverines into quinolizidine alkaloids, 105-10
Aspidosperma alkaloids. Conversion of tabersonine into vindoline, 155-62
Aaptamines. Novel benzo[de][1,6]naphthyridines from the Okinawan marine sponge Aaptos aaptos, 173-6
Structure elucidation of the binary indole alkaloid uncaramine, 571-6
Vinyl azides in heterocyclic synthesis. Part 9. Synthesis of the isoquinolone alkaloid siamine by intramolecular aza-Wittig reaction, 1395-8
Synthesis of some hexahydroazocino $[4,3-b]$ indoles, a tetra- and two hexahydropyrrolo $\left[1^{\prime}, 2^{\prime}: 1,2\right]$ pyrrolo $[3,4-b]$ indoles, and a tetrahydropyrrolo $\left[2^{\prime}, 1^{\prime}: 5,1\right]$ imidazo $[3,4-a]$ indole. Crystal structure determination of $1,2,3,4$-tetrahydro-2-phenoxycarbonyl-7-phenylsulphonylazocino[4,3-b]indol-6(5H)-one, 1599606
Total synthesis of heptacyclic Aspidosperma alkaloids. Part 1. Preliminary experiments, 2079-90
Pyrrolizidine alkaloids. Stereochemistry of the enzymic processes involved in the biosynthesis of rosmarinecine., 2195-202
Basic intramolecular acylation. Synthesis of 2-aryl-1-tetralones bearing isopropoxy or benzyloxy groups, synthetic key intermediates for phenolic antileukaemic benzo[ $c]$ phenanthridine alkaloids, from 2,4-diarylbut yric acid derivatives, 2415-20
Conversion of $N$-hydroxytryptophans into $\alpha, \beta$-dehydrotryptophan. An approach to the neoechinulin series, 2473-80
Regioselective total synthesis of ( $\pm$ )-berberastine, 2565-8
ALKANE
Studies on the synthesis of linear aliphatic compounds. Part 2. The realisation of a strategy for repeated molecular doubling, 244754
Studies on the synthesis of linear aliphatic compounds. Part 3. The synthesis of paraffins with very long chains, 245564

## ALKENE

Gas-liquid phase-transfer catalysis: Wittig-Horner reaction in

ALKENE (contd)
heterogeneous conditions, 713-4
Polyhalogenoheterocyclic compounds. Part 38. Reactions of fluorinated-alkenes and -cycloalkenes with difunctional nucleophiles, 763-8
Electrophilic addition of benzeneselenenyl chloride to alkenes bearing an electron-withdrawing substituent, 1059-62
Alkene cyclisations of $N$-alkenyl- $\alpha$-(methylsulphinyl)acetamides and $N$-alkenyl- $x$-chloro- $\alpha$-(methylthio)acetamides: novel synthesis of five-, six-, and seven-membered lactams, 1099-106
Ruthenium(II)- and rhenium(III)-catalysed addition of
tetrahalogenomethanes to alkenes and $1, \omega$-dienes. Stereoselective formation of cis-1,2-disubstituted cyclopentanes from 1,6-dienes, 1515-20
Use of the diazoalkane-thione reaction in the synthesis of a vinyltrimethylenemethane precursor, 2497-504
Photocycloaddition of quinoxalin-2-ones and benzoxazin-2-ones to aryl alkenes, 2611-6
Asymmetric induction in addition of $N$-nitrenes to alkenes: 2-(chiral)-substituted benzimidazole-derived $N$-nitrene additions to alkenes, 2787-96
Asymmetric induction in addition of $N$-nitrenes to alkenes: oxidation of 3-amino-2-(1,2,2-trimethylpropyl)quinazolin-4(3H)one in the presence of $\alpha$-methylene- $\gamma$-butyrolactone:
conformational analysis of the aziridines formed and comparison with alkanoylated cyclopropylamines, 2797-802
Boron trifluoride-promoted reaction of benzenesulphenanilides with alkenes in acetonitrile and benzonitrile: amidino-and amidosulphenylation of alkenes, 2815-8
ALKENE SYNTHESIS
A directed aldol approach to $(+)$-milbemycin $\beta_{3}, 2171-82$

## ALKENOL

Applications of the stereochemically-controlled Horner-Wittig reaction: synthesis of feniculin, $(E)$-non-6-en-1-ol, a pheromone of the mediterranean fruit fly, $(E)$ - and $(Z)$-dec-5-en-1-ol, trisubstituted alkenes, and ( $Z$ )-x-bisabolene, 2569-78

## ALKOXYDENITRATION

Synthesis of substituted dibenzophospholes. Part 6. Preparation of symmetrical and non-symmetrical quaterphenyl intermediates, 859-66
Synthesis of substituted dibenzophospholes. Part 7. Regiospecific synthesis of 4,6-diaryl-3,7-dioxydibenzophospholes from 2,2'4,4'tetranitrobiphenyl, 867-70
Synthesis of substituted dibenzophospholes. Part 8. Synthesis and resolution of atropisomers of a 4,6-diaryldibenzophosphole, 8716

## ALKYLATION

Regiochemical control in the alkylation of tetrahydroindanones, 759-62
The chemistry of $N$-substituted benzotriazoles. Part 4. A novel and versatile method for the mono- $N$-alkylation of aromatic and heteroaromatic amines, 805-10
Acid-catalysed intramolecular $C$-alkylation in $\beta, \gamma$-unsaturated diazomethyl ketones. Part 5. Synthesis of functionalised hydrofluorene derivatives via novel fragmentation reactions, 1263-8
Selective ortho-alkylation of phenols with sulphoxides via [2,3]sigmatropic rearrangement: synthesis of coumarins, 17536

Alkylation reactions of ethyl malonate, ethyl acetoacetate, and acetylacetone by gas-liquid phase-transfer catalysis (G.L.-P.T.C.), 2159-62
Reaction of azoles with ethyl bromopyruvate oxime: alkylation by substitution and by elimination-addition, 2235-40
ALKYL HALIDE
Continuous conversion of alcohols into alkyl halides by gas-liquid phase-transfer catalysis (G.L.-P.T.C.), 2157-8
ALKYNE
Organic heterocyclothiazenes. Part 2. Reaction of tetrasulphur tetranitride with phenylacetylene and diphenylacetylene, 207-10
Stereoselective bifunctionalization of alkynes by means of the mercury(II) salt-iodine combination, 1017-20
Organic heterocyclothiazenes. Part 5. Cycloaddition reactions of tetrasulphur tetranitride with highly electron deficient alkynes, 1579-84
Organic heterocyclothiazenes. Part 6. Improved synthesis of trithiadiazepines from tetrasulphur tetranitride and alkynes, 1585-92
Reaction of di-t-butoxyethyne with $\mathrm{Fe}_{2}(\mathrm{CO})_{9}: X$-ray crystal
structure of (tetra-t-butoxycyclopentadienone)tricarbonyliron(0) and an improved formal synthesis of hydrocroconic acid and the croconate dianion, 2749-52

## ALLOSE

5-Thiopyranoses. Part 11. Isopropylidene acetals of 5-thio-Dglucose, 5-thio-D-allose, and 5-thio-D-altrose and some of their methyl glycosides, 1413-20

## ALLYLAMINE

Reactions of tertiary allylamines with dimethyl acetylenedicarboxylate, 2023-6

## ALLYL ANION

Phenylthioallyl and phenylthiovinyl phosphine oxides: synthesis of 1-phenylthiobutadienes and a three-component synthesis of ketones, 967-76

## ALLYL ETHER

The allyl group for protection in carbohydrate chemistry. Part 21. $( \pm)$-1,2:5,6-and $( \pm)$-1,2:3,4-di- $O$-isopropylidene-myo-inositol. The unusual behaviour of crystals of $( \pm)-3,4$-di- $O$-acetyl-1,2,5,6-tetra- $O$-benzyl-myo-inositol on heating and cooling: a 'thermosalient solid', 2411-4

## ALLYLIC SULPHINATE

Rearrangement of some allylic sulphinate esters to allylic sulphones. Ion-pair and sigmatropic shift mechanisms, 2149-52

## ALLYLIC SULPHONE

Rearrangement of some allylic sulphinate esters to allylic sulphones. Ion-pair and sigmatropic shift mechanisms, 2149-52
Preparation of some allylic sulphones; base-catalysed isomerisation and deuteriation of cyclohex-2-enyl p-tolyl sulphones, 2701-6
1,3-Rearrangements of some allylic sulphones, 2707-14

## ALLYLSTANNANE

A regiocontrolled synthesis of allylstannanes, 2259-64

## ALLYL SULPHIDE

Allyl sulphide synthesis by phenylthio migration: relationship between stereochemistry of starting materials and regioselectivity of double bond formation, 2579-84

## ALTROSE

5-Thiopyranoses. Part 11. Isopropylidene acetals of 5-thio-dglucose, 5-thio-D-allose, and 5-thio-D-altrose and some of their methyl glycosides, 1413-20
ALUMINIUM CHLORIDE
Inter- and intra-molecular aromatic $N$-substitution by arylnitrenium-aluminium chloride complexes generated from aryl azides in the presence of aluminium chloride, 57-60

## AMIDE

Cyanide substitution in aryl halides by copper(I) complexes derived from formamide and from formaldehyde oxime, 619-22

## AMINE

The chemistry of $N$-substituted benzotriazoles. Part 4. A novel and versatile method for the mono- $N$-alkylation of aromatic and heteroaromatic amines, 805-10
Reactivity of 4-amino-2-benzyl-2,3-dihydro-3-oxo-1,2,5-thiadiazole 1,1 -dioxide towards amines: synthesis of potential histamine $\mathrm{H}_{2}$ receptor antagonists, 955-60
Usefulness of poly(ethylene glycol) in synthetic reactions. Part 10. Deamination of arylamines via dediazoniation by tinhydrochloric acid in poly(ethylene glycol)-methylene dichloride, 1951-4
$N$-monomethylation of primary amines via intermediate benzothiazol-2( 3 H )-imines, 2539-42

## AMINO ACID

Asymmetric oxidation of sulphides to sulphoxides catalysed by titanium complexes of $N$-salicylidene-L-amino acids, 71-4
Hexahydro-1,4-oxazepines. Part 2. Unambiguous synthesis, 557-8
Synthesis of $(2 R, 3 S, 4 R)$-3,4-dihydroxyproline from D-ribonolactone; an approach to the synthesis of polyfunctionalised D -amino acids from sugar lactones. $X$-Ray molecular structures of 2-azido-3,4- $O$ ( $R$ )-benzylidene-2-deoxy-D-ribono-1,5-lactone, 2-azido-2-deoxy-D-ribono-1,5-lactone, and ( $2 R, 3 S, 3 R$ )-3,4-dihydroxyproline, 178592
Studies on amino acid derivatives. Part 7. General method for the synthesis of penam and cepham and their substituted derivatives., 1845-52
Synthesis of sequential polydepsipeptides involving depsipeptide formation by the 2 -nitrophenylsulphenyl $N$-carboxy $x$-amino acid anhydride (Nps-NCA) method, 2249-52
AMINO ALCOHOL
Lithium aluminium hydride reduction of chiral benzoylformamides derived from chiral amino alcohols, 1495-500

## AMINOALKYLATION

The chemistry of benzotriazole. Part 3. The aminoalkylation of benzotriazole, 799-804
AMINOETHANOL
The preparation and absolute configuration of the optically active forms of the diastereoisomers of 2-(1-phenylethyl)amino-1phenylethanol and their use as chiral auxiliaries in the asymmetric reduction of acetophenone with modified lithium aluminium hydrides, 601-6
AMINOGLUTETHIMIDE
The synthesis of 3-(4-aminotetrafluorophenyl)-3-ethylpiperidine-2,6dione; a fluorinated derivative of aminoglutethimide, 2129-36
AMINYL RADICAL
Gas phase rearrangement reactions of 2-(arylamino)phenylaminyl radicals, 1407-12
AMORPHA FRUTICOSA
Metabolism of $2^{\prime}, 4,4^{\prime}$-trihydroxychalcone in Amorpha fruticosa seedlings; structure and role of chalaurenol, a novel heterocyclic enol ether formed by enzymic oxidation, 2775-82
AMPHIMEDINE
Vinyl azides in heterocyclic synthesis. Part 7. Synthetic studies on the cytotoxic marine alkaloid amphimedine, 927-30
ANDROSACE SAXIFRAGIFOLIA
New triterpenoid pentasaccharides from Androsace saxifragifolia, 1963-8
ANDROSTANE
Synthesis of 16 -substituted 17 -nor-13x-steroids and skeletal rearrangement of 17 -nor-5x, $13 x$-androstane-16x-carbonyl $m$ chlorobenzoyl peroxide, 1247-54
ANDROSTENE
Preparation of aromatase inhibitors. Synthesis of 19,19-difluoro-4-hydroxyandrost-4-ene-3,17-dione and related compounds, 385-8
ANDROSTENONE
Synthesis of C-19-chiral steroids. Preparation of (19R); (19S) and (19RS)-3 $\beta$-hydroxy $\left[19-{ }^{2} \mathrm{H}_{1}, 19-{ }^{3} \mathrm{H}_{1}\right]$ androst-5-en-17-ones, $61-70$
ANILINE
$o$-Nitrobenzylidene compounds. Part 3. Formation of 4-arylamino3 -methoxycinnoline 1 -oxides from N -o-nitrobenzylideneanilines, cyanide ion, and methanol: the intermediacy of 2-aryl-3-cyano2 H -indazole 1 -oxides, 495-500
$o$-Nitrobenzylidene compounds. Part 4. The cyanide-induced cyclisation of $o$-acetamido- $N$-( $o$-nitrobenzylidene) anilines: an improved route to quinoxalino[2,3-c]cinnolines, 501-6
ANISOLE
Photochemical cycloadditions of 1,3-dioxoles to anisole, 15-20

## ANNULENE

Synthesis and properties of methano bridged tetradehydro[18]annulene, -[20]annulene, -[22]annulene, -[24]annulene, and the related [1,3]cyclophanpolyenediyne compounds, 831-44
Syntheses and properties of dicyanodimethyltetradehydro-trideca-, -pentadeca-, -heptadeca-, and -nonadeca-annulenes, and benzannelated tridecafulvene derivatives, 1505-10
The synthesis of some thiophenophanes and attempted cyclisations to polycyclic thiophenium salts, 2321-32
ANTHRAQUINONE
Dichroic dyestuffs. A synthesis of dialkyl-8-amino-1,4,5-trihydroxyand 1,4,5,8-tetrahydroxy-anthraquinones., 445-8
ANTIAROMATICITY
Cyclo-octa[def]carbazole, a new heterocyclic paratropic ring system, 403-12
Photolysis of 1 -aryl-1,2,3-triazoles; rearrangement via 1 H -azirines, 413-22
Preparation of stable 1,4-dihydropyrazines, 1841-4
ANTIBACTERIAL
Preparation and properties of $7 x$-formamido cephalosporins, 45-56
Novel semisynthetic oxo and alkyl macrolide antibacterials and related derivatives, 1189-210

## ANTIBIOTIC

Biosynthesis of the polyether ionophore antibiotic monensin A: assignment of the carbon-13 and proton n.m.r. spectra of monensin A by two-dimensional spectroscopy. Incorporation of oxygen-18 labelled molecular oxygen, 27-36
New approaches to the synthesis of $\beta$-lactam antibiotics, 1237-42
Structure elucidation of the macrocyclic antibiotic lipiarmycin, 1353-60
Structure elucidation of the glycopeptide antibiotic complex A40926, 2103-8
ANTICANCER AGENT
The synthesis of 3-(4-aminotetrafluorophenyl)-3-ethylpiperidine-2,6-
dione; a fluorinated derivative of aminoglutethimide, 2129-36
Structural studies on bio-active compounds. Part 5. Synthesis and properties of 2,4 -diaminopyrimidine dihydrofolate reductase inhibitors bearing lipophilic azido groups, 2217-28
Structural studies on bio-active compounds. Part 6. Determination of the sites of protonation on three 2,4-diaminopyrimidines of pharmaceutical importance by proton-coupled ${ }^{13} \mathrm{C}$ and ${ }^{1} \mathrm{H}$ nuclear magnetic resonance spectroscopy, 2229-34

## ANTILEUKAEMIC ACTIVITY

Synthesis of 5-(1-substituted ethyl)uracil derivatives and some of their chemical and biological properties, 457-64

## ANTILEUKAEMIC ALKALOID

Studies on the chemical constituents of Rutaceous plants. Part 62. Efficient synthesis of fagaronine, a phenolic benzo[c]phenanthridine alkaloid with antileukaemic activity, 671-6

## ANTIMONY

The chemistry of pentavalent organobismuth reagents. Part 7. The possible role of radical mechanisms in the phenylation process for bismuth(v), and related lead(Iv), iodine(iII), and antimony(v) reagents, 241-50

## ANTITUMOUR ACTIVITY

Transformation of santonin into (+)-deoxyvernolepin and related dilactones, 2833-8
ANTIVIRAL ACTIVITY
Synthesis of 5-(1-substituted ethyl)uracil derivatives and some of their chemical and biological properties, 457-64

## APPARACINE

Synthesis of some hexahydroazocino $[4,3-b]$ indoles, a tetra- and two hexahydropyrrolo $\left[1^{\prime}, 2^{\prime}: 1,2\right]$ pyrrolo $[3,4-b]$ indoles, and a tetrahydropyrrolo $\left[2^{\prime}, 1^{\prime}: 5,1\right]$ imidazo $\left.3,4-a\right]$ indole. Crystal structure determination of 1,2,3,4-tetrahydro-2-phenoxycarbonyl-7-phenylsulphonylazocino[4,3-b]indol-6( $5 H$ )-one, 1599-606
APPETITE SUPPRESSANT
Synthesis and resolution of 3 -substituted morpholine appetite suppressants and chiral synthesis via O-arylhomoserines, 547-52

## ARENE PHOTOCHEMISTRY

Selectivity and charge transfer in photoreactions of donor-acceptor systems. Part 10. meta Photocycloadditions of $m$ bis(trifluoromethyl)benzene and trifluoromethyl benzonitriles to olefins, 2333-8
ARENETRICARBONYLCHROMIUM
The diastereoselective functionalisation of arene tricarbonylchromium complexes containing a benzylic heteroatom substituent, 1805-12

## AROMATASE

The synthesis of 3-(4-aminotetrafluorophenyl)-3-ethylpiperidine-2,6-dione; a fluorinated derivative of aminoglutethimide, 212936

## AROMATASE INHIBITOR

Preparation of aromatase inhibitors. Synthesis of 19,19-difluoro-4-hydroxyandrost-4-ene-3,17-dione and related compounds, 385-8
AROMATIC ADDITION
Reactions of carbamyl (urethanyl) radicals: intramolecular aromatic additions, 1243-6
AROMATICITY
Organic heterocyclothiazenes. Part 1. The trithiadiazepine and trithiatriazepine ring systems, 203-6
Organic heterocyclothiazenes. Part 3. Synthesis and structure of 1,3,5,2,4-trithiadiazepines, 211-6
Organic heterocyclothiazenes. Part 4. Chemistry of $1,3,5,2,4-$ trithiadiazepines, 217-24
Synthesis and properties of methano bridged tetradehydro[18]annulene, -[20]annulene, -[22]annulene, -[24]annulene, and the related [1,3]cyclophanpolyenediyne compounds, 831-44
ARSENIC-CONTAINING RIBOFURANOSIDE
Isolation and identification of arsenic-containing ribofuranosides and inorganic arsenic from Japanese edible seaweed Hizikia fusiforme, 577-80
ARYLAMINE
Diazotization and Sandmeyer reactions of arylamines in poly(ethylene glycol)-methylene dichloride: usefulness of PEG in synthetic reactions, 645-8
Preparation of stable 1,4-dihydropyrazines, 1841-4

## ARYLATION

The chemistry of pentavalent organobismuth reagents. Part 7. The possible role of radical mechanisms in the phenylation process for bismuth(v), and related lead(IV), iodine(III), and antimony(v) reagents, 241-50

## ARYLATION (contd)

2-Bromo-3-methoxycyclohex-2-enone, a new reagent for the $x$ arylation of lactams, 2153-6
The chemistry of aryl-lead(IV) tricarboxylates. Reaction with vinylogous $\beta$-keto esters, 2689-94
Use of the electrophilic arylation reaction of aryl-lead triacetates in a synthesis of $( \pm)$-lycoramine, 2695-700
ARYL HALIDE
Carbonylation of aryl halides and vinyl bromides mediated by tetracarbonylcobalt anion, 1021-6
3-Aryl-1-tetrazol-5-yltriazenes, bench-stable arenediazonium ion synthons: synthesis of biaryls and aryl halides, 103942
ARYL MIGRATION
Thallium(III) nitrate-mediated efficient synthesis of 2-arylpropionic acids from 1-halogenoethyl aryl ketones, 1255-8
Oxidative rearrangement of aryl ethyl ketones to alkyl 2arylpropanoates by lead(Iv) acetate, 1433-6
ARYLNITRENIUM COMPLEX
Inter- and intra-molecular aromatic $N$-substitution by arylnitrenium-aluminium chloride complexes generated from aryl azides in the presence of aluminium chloride, 57-60
ARYL SHIFT
Synthesis of $8,9,10,11,12,13,13 \mathrm{a}, 14$-octahydro-7,11; 9,13dimethanoazonino $[1,2-b]$ isoquinolin- $5(7 H)$-ones and some related derivatives by photocyclization reactions of 5-methylene-4-aroyl- and -acryloyl-4-azatricyclo[4.3.1.1 ${ }^{3,8}$ ]undecanes (4azahomoadamantanes), 1171-6
ARYLSULPHONYLCARBENE
Addition of arylsulphonylcarbenes to benzene, 715-6
ASCLEPIAS SPECIOSA
Structure of aspecioside from the Monarch butterfly larvae foodplants Asclepias speciosa and A. syrica, 2109-10
ASCLEPIAS SYRICA
Structure of aspecioside from the Monarch butterfly larvae foodplants Asclepias speciosa and A. syrica, 2109-10

## ASPECIOSIDE

Structure of aspecioside from the Monarch butterfly larvae foodplants Asclepias speciosa and A. syrica, 2109-10
ASPERGILLUS OCHRACEOUS
Microbial transformations of sesquiterpenoids: conversion of deoxyvulgarin by Rhizopus nigricans and Aspergillus ochraceous, 471-4
ASPERGILLUS SILVATICUS
Studies on fungal products. Part 13. Isolation and structures of dithiosilvatin and silvathione, novel dioxopiperazine derivatives from Aspergillus silvaticus, 2099-102
ASPERGILLUS USTUS
Metabolites of Aspergillus ustus. Part 4. Stable-isotope labelling studies on the biosynthesis of the austalides , 2253-8
ASPIDOSPERMA
Aspidosperma alkaloids. Conversion of tabersonine into vindoline, 155-62
ASPIDOSPERMA ALKALOID
Total synthesis of heptacyclic Aspidosperma alkaloids. Part 1. Preliminary experiments, 2079-90
ASPIDOSPERMIDOSE
Aspidospermidose: a new dihydroindole alkaloid from the leaves of Rhazya stricta, 1701-4
ASYMMETRIC INDUCTION
1,2-Asymmetric induction in intramolecular Michael reaction. A novel and enantioselective route to $(+)$-Geissman lactone, 9931004
Asymmetric induction in addition of $N$-nitrenes to alkenes: 2-(chiral)-substituted benzimidazole-derived $N$-nitrene additions to alkenes, 2787-96
Asymmetric induction in addition of $N$-nitrenes to alkenes: oxidation of 3-amino-2-(1,2,2-trimethylpropyl)quinazolin-4(3H)one in the presence of $\alpha$-methylene- $\gamma$-butyrolactone: conformational analysis of the aziridines formed and comparison with alkanoylated cyclopropylamines, $2797-$ 802
ASYMMETRIC REDUCTION
The preparation and absolute configuration of the optically active forms of the diastereoisomers of 2-(1-phenylethyl)amino-1phenylethanol and their use as chiral auxiliaries in the asymmetric reduction of acetophenone with modified lithium aluminium hydrides, 601-6
ASYMMETRIC RING OPENING
Enantiotopic-group differentiation. Catalytic asymmetric ring-
opening of prochiral cyclic acid anhydrides with methanol, using cinchona alkaloids, 1053-8

## ASYMMETRIC SYNTHESIS

Asymmetric synthesis of optically active threo- and erythropyrrolidinylbenzyl alcohol by the highly stereospecific arylation of ( $S$ )-proline and the subsequent highly diastereoselective reduction of the $x$-amino ketone, 1465-72
ATROPISOMER
Synthesis of substituted dibenzophospholes. Part 8. Synthesis and resolution of atropisomers of a 4,6-diaryldibenzophosphole, 8716

## ATROPISOMERISM

Synthesis of condensed tannins. Part 19. Phenol oxidative coupling of $(+)$-catechin and $(+)$-mesquitol. Conformation of bis $(+)-$ catechins, 2345-52

## AUSTALIDE

Metabolites of Aspergillus ustus. Part 4. Stable-isotope labelling studies on the biosynthesis of the austalides , 2253-8

## AUTOXIDATION

Autoxidation and solvolysis products of octaethylverdohaemochrome, 1183-8

## AVERMECTIN

Preparation of a chiral lactone from laevoglucosan; a key intermediate for synthesis of the spiroacetal moieties of the avermectins and milbemycins, 1613-22

## AZA-ALLYLIC CARBANION

The reaction of sodium 1,3-diphenyl-2-azapropenide with 1,2epoxycyclohexane, 515-8
AZABICYCLONONANE
Studies on pyrrolizidines and related compounds. Part 9. Rearrangement of 7a-trichloromethyl-2,3,5,6,7,7a-hexahydro- 1 H pyrrolizine and related compounds: an alternative route to 5 substituted 1-azabicyclo[3.3.1]nonanes, 313-6
AZA- $\beta$-LACTAM
Synthesis of 1,2-diazetidinones (aza- $\beta$-lactams) by photochemical ring contraction, 877-84
Regioselectivity in the photochemical ring contraction of 4-diazopyrazolidine-3,5-diones to give aza- $\beta$-lactams, 885-98
Rhodium carbenoid mediated cyclisations. Synthesis of 1,2diazetidinones (aza- $\beta$-lactams), 899-902
AZABUTADIENE
Conformation dependent photochemistry of dienes. Substituent effects on the photochemical reactions of some 4-acyloxy-2-azabuta-1,3-dienes, 2663-6
AZA CROWN ETHER
The formation of complexes between aza derivatives of crown ethers and primary alkylammonium salts. Part 9. Bicyclic derivatives of diaza crown ethers, 1921-8
AZACYCLOPHANE
Synthesis of [6](2,4)pyridinophanes, 2829-32
AZA-DI- $\pi$-METHANE
Studies on the scope of the aza-di- $\pi$-methane rearrangement of $\beta, \gamma$ unsaturated imines, 743-6

## AZADIRACHTA INDICA

Studies in the chemical constituents of Azadirachta indica A. Juss (Meliaceae). Part 10. Isolation and structure elucidation of isonimolicinolide, the first 17-acetoxy tetranortriterpenoid and nimolicinoic acid, the first hexanortriterpenoid with an Apoeuphane (Apotirucallane) skeleton, 1429-32
AZAERGOLINE
The synthesis of 9,10-dimethyl-4,6,6a,7,8,9,10,10a-octahydroindolo[3,4-gh]-isoquinoline, the 8,9-dimethyl-8-aza analogue of ergoline, 707-12
AZAFLUORENE
Azafluorenes containing two bridgehead nitrogen atoms, 2585-92

## AZAPEPTIDE

Inhibitors of human leucocyte elastase. Peptides incorporating an $\alpha$-azanorvaline residue or a thiomethylene linkage in place of a peptide bond, 111-20
AZAPYRACRIDONE
Saturated heterocycles. Part 88. Synthesis of a new ring system: dipyrido[1,2-a:4,3- $d$ ]pyrimidin-11-one derivatives, 909-12
AZASPIROUNDECANE
Model studies of histrionicotoxin. The synthesis of the 1azaspiro[5.5] undecane rings system from carbohydrate starting materials, 21-6
AZA STEROID
The synthesis of some cholesterol derivatives as probes for mechanisms of cholesterol metabolism, 595-600

## AZASULPHENYLATION

Boron trifluoride-promoted reaction of benzenesulphenanilides with alkenes in acetonitrile and benzonitrile: amidino-and amidosulphenylation of alkenes, 2815-8
AZATRICYCLOUNDECANE
Synthesis of $8,9,10,11,12,13,13 \mathrm{a}, 14$-octahydro-7,11; 9,13dimethanoazonino[ $1,2-b]$ isoquinolin- $5(7 \mathrm{H})$-ones and some related derivatives by photocyclization reactions of 5-methylene-4-aroyl- and -acryloyl-4-azatricyclo[4.3.1.1 ${ }^{3.8}$ ]undecanes (4azahomoadamantanes), 1171-6
AZA-WITTIG REACTION
Vinyl azides in heterocyclic synthesis. Part 6. Synthesis of isoquinolines by intramolecular aza-Wittig reaction, 921--6
Vinyl azides in heterocyclic synthesis. Part 9. Synthesis of the isoquinolone alkaloid siamine by intramolecular aza-Wittig reaction, 1395-8

## AZETIDINE

Photocycloaddition of quinoxalin-2-ones and benzoxazin-2-ones to aryl alkenes, 2611-6

## AZETIDINONE

Studies related to penicillins. Part 23. Preparation of the $N$ phenylacetyl and $N$-triphenylmethyl derivatives of ( $3 R, 4 R$ )-3-amino-4-t-butylthioazetidin-2-one, 2009-16
Stereospecific synthesis of a chiral intermediate for the preparation of thienamycin, penems, and carbapenems: use of the nitro group as a hydroxy protecting group, 2637-42
AZIDE
Inter- and intra-molecular aromatic $N$-substitution by arylnitrenium-aluminium chloride complexes generated from aryl azides in the presence of aluminium chloride, 57-60
Vinyl azides in heterocyclic synthesis. Part 5. Thermal and photochemical decomposition of azidocinnamates containing ortho-cycloalkylidene substituents, 913-20
Vinyl azides in heterocyclic synthesis. Part 6. Synthesis of isoquinolines by intramolecular aza-Wittig reaction, 921-6
Vinyl azides in heterocyclic synthesis. Part 7. Synthetic studies on the cytotoxic marine alkaloid amphimedine, 927-30
Structural studies on bio-active compounds. Part 5. Synthesis and properties of 2,4-diaminopyrimidine dihydrofolate reductase inhibitors bearing lipophilic azido groups, 2217-28
A new route to chiral hydroxypyrrolidines from D-erythrose via intramolecular 1,3-cycloaddition, 2371-6

## AZIRIDINATION

Intramolecular reactions of $N$-nitrenes: description of the transition state geometry for addition to alkenes, 1135-46
Chiral aziridination of $\alpha, \beta$-unsaturated esters and ketones using $N$ nitrenes in the presence of trifluoroacetic acid, 2803-8
AZIRIDINE
Stereoselective synthesis of trans-2-aryl-3-(2-pyridyl)aziridines from an $x$-silyl carbanion, 1489-94
Asymmetric induction in addition of $N$-nitrenes to alkenes: oxidation of 3-amino-2-(1,2,2-trimethylpropyl)quinazolin-4(3H)one in the presence of $\alpha$-methylene- $\gamma$-butyrolactone: conformational analysis of the aziridines formed and comparison with alkanoylated cyclopropylamines, 2797-802
AZIRINE
Photolysis of 1-aryl-1,2,3-triazoles; rearrangement via 1 H -azirines, 413-22
Vinyl azides in heterocyclic synthesis. Part 8. Synthesis of the naturally occurring phosphodiesterase inhibitors PDE-I and PDE-II, 931-6

## AZOALKENE

Intramolecular cycloaddition of azoalkenes derived from terminal alkenoic and alkynoic acids, 2511-6
Formation of pyridazino[6,1-c][1,4]oxazin-8(7H)-ones by intramolecular cycloaddition of azoalkenes, 2517-22
AZOCINOINDOLE
Synthesis of some hexahydroazocino[4,3-b]indoles, a tetra- and two hexahydropyrrolo $\left[1^{\prime}, 2^{\prime}: 1,2\right]$ pyrrolo $[3,4-b]$ indoles, and a tetrahydropyrrolo $\left[2^{\prime}, 1^{\prime}: 5,1\right]$ imidazo $[3,4-a]$ indole. Crystal structure determination of 1,2,3,4-tetrahydro-2-phenoxycarbonyl-7-phenylsulphonylazocino[4,3-b]indol-6(5H)-one, 1599-606
AZODICARBOXYLATE
The reaction of diols with triphenylphosphine and di-isopropyl azodicarboxylate. Part 2. Formation of cyclic phosphoranes from 1,5-1,12-diols, 2057-60

## AZOLE

Azoles. Part 4. Nucleophilic substitution reactions of halogenoimidazoles, 1437-44

Azoles. Part 5. Metal-halogen exchange reactions of polybromoimidazoles, 1445-52
Azoles. Part 6. A convenient synthesis of polysubstituted imidazoles from 1-protected 2,4,5-tribromoimidazoles, 1453-6
Azoles. Part 7. A convenient synthesis of thieno[2,3- $d$ ]imidazoles, 1457-64
Reaction of azoles with ethyl bromopyruvate oxime: alkylation by substitution and by elimination-addition, 2235-40
AZONIABENZOPERYLENE
Syntheses of condensed polycyclic azonia aromatic compounds by photocyclization, 481-8

## AZONIADIBENZOPHENANTHRENE

Syntheses of condensed polycyclic azonia aromatic compounds by photocyclization, 481-8
BAKER'S YEAST
Synthesis of enantiomerically pure 2,5 -disubstituted
tetrahydrofurans using readily prepared ( $2 S$ )-1-phenylsulphonylalkan-2-ols, 1799-804
BAKER'S YEAST REDUCTION
Studies on the stereochemical control of fermenting baker's yeast mediated reductions: some 3- and 4-oxo esters, 2753-8

## BARTON OXIDATION

Synthesis of some tetrahydrosantonin derivatives with functionalised angular substituents based on remote oxidation, 1793-8

## BEER

The photolysis of trans-isohumulone to dehydrohumulinic acid, a key route to the development of sunstruck flavour in beer, 2715-8

## BENZENESELENENYL CHLORIDE

Electrophilic addition of benzeneselenenyl chloride to alkenes bearing an electron-withdrawing substituent, 1059-62
BENZENESELENINIC ANHYDRIDE
Aspidosperma alkaloids. Conversion of tabersonine into vindoline, 155-62
BENZENESULPHENANILIDE
Boron trifluoride-promoted reaction of benzenesulphenanilides with alkenes in acetonitrile and benzonitrile: amidino-and amidosulphenylation of alkenes, 2815-8

## BENZIMIDAZOLE

The lithiation of 1 -(phenylthiomethyl)benzimidazole and related compounds, 775-80
Synthesis of asymmetrically substituted aminohalogenobenzimidazoles, 2317-20
Asymmetric induction in addition of $N$-nitrenes to alkenes: 2-(chiral)-substituted benzimidazole-derived $N$-nitrene additions to alkenes, 2787-96
BENZINDENOL
A novel stereoselective access to des- $A B$-aromatic corticosteroids via intramolecular cycloaddition reaction-potential intermediates for the synthesis of corticosteroids, 1727-34
BENZISOXAZOLE OXIDE
Reactivity of 1,2-benzisoxazole 2 oxides, 695-8
BENZOCARBAPENAM
Synthesis of benzocarbacephem and benzocarbapenem derivatives by copper-promoted intramolecular aromatic substitution, 1899908
BENZOCHROMENE
Synthesis of substituted dibenzophospholes. Part 7. Regiospecific synthesis of 4,6-diaryl-3,7-dioxydibenzophospholes from 2,2'4,4'tetranitrobiphenyl, 867-70
BENZOCYCLOBUTENE
Synthesis and rearrangements of 1,1'-bi(benzocyclobutylidene) and its derivatives, 1561-6
A novel stereoselective access to des- $A B$-aromatic corticosteroids via intramolecular cycloaddition reaction-potential intermediates for the synthesis of corticosteroids, 1727-34
Application of a tandem electrocyclic [3,3]sigmatropic reaction of $o$-quinodimethane to the synthesis of Calabar bean alkaloids. Part 2. First total synthesis of ( $\pm$ )-geneserine, 2491-6
BENZOCYCLOHEPTENE
The rearrangement of a tetrahydrobiphenylene derivative to a bridged benzocycloheptene, 2443-6

## BENZOCYCLO-OCTENE

The rearrangement of a tetrahydrobiphenylene derivative to a bridged benzocycloheptene, 2443-6
BENZODIOXEPINE
Polyhalogenoheterocyclic compounds. Part 38. Reactions of fluorinated-alkenes and -cycloalkenes with difunctional nucleophiles, 763-8

## BENZODIOXIN

Enzyme-mediated $\mathrm{H}_{2} \mathrm{O}_{2}$ oxidation of (E)-stilbene-3,4-diol, 2719-22 BENZODIOXOLE

Polyhalogenoheterocyclic compounds. Part 38. Reactions of fluorinated-alkenes and -cycloalkenes with difunctional nucleophiles, 763-8
The structure and synthesis of nepenthone-A, a naphthoquinone from Nepenthes rafflesiana, 2017-22
BENZOFURAN
Synthesis of the Mammea coumarins. Part 2. Experiments in the mammea $E$ series and synthesis of mammea E/AC, 333-44
Acid-catalysed coupling reactions and conversions of isoflavone epoxides, 1081-8
Ketene $S, N$-acetals as synthetic intermediates for heterocycles. Reaction of ketene $S, N$-acetals with 1,4-quinones, 1501-4
Regiospecific arylation of 1,4-benzoquinone cyanohydrin phosphate: synthesis of 3-aryl-4-hydroxybenzonitriles, 1771-6
The synthesis of heteroaromatic prostacyclin analogues via keto alkyne cyclisation, 1825-32
Enzyme-mediated $\mathbf{H}_{2} \mathrm{O}_{2}$ oxidation of $(E)$-stilbene-3,4-diol, 271922
Medicinal plants of southern Africa. Part 1. Dimeric chalcone-based pigments from Brackenridgea zanguebarica, 2809-14
BENZOISOTHIAZOLE
Nitrile sulphides. Part 7. Synthesis of [1] benzopyrano[4,3$c$ ] isothiazoles and isothiazolo[4,3-c] quinolines, $2339-44$
BENZONAPHTHYRIDINE
Aaptamines. Novel benzo[de][1,6]naphthyridines from the Okinawan marine sponge Aaptos aaptos, 173-6
BENZOPHENANTHRIDINE
Studies on the chemical constituents of Rutaceous plants. Part 62. Efficient synthesis of fagaronine, a phenolic benzo[ $c]$ phenanthridine alkaloid with antileukaemic activity, 671-6
Chemical transformation of protoberberines. Part 10. A novel synthesis of sanguilutine and dihydrosanguilutine, fully aromatised 2,3,7,8,10-pentaoxygenated benzo $[c]$ phenanthridine alkaloids, 677-82
Basic intramolecular acylation. Synthesis of 2-aryl-1-tetralones bearing isopropoxy or benzyloxy groups, synthetic key intermediates for phenolic antileukaemic benzo[c]phenanthridine alkaloids, from 2,4-diarylbutyric acid derivatives, 2415-20

## BENZOPYRAN

Studies on chromone derivatives. Novel 1,3 dipolar cycloadditions of 4-oxo-1-benzopyran-3-carbaldehyde imines and imine oxides, 1995-8
BENZOPYRANOINDOLE
Regiospecific arylation of 1,4-benzoquinone cyanohydrin phosphate: synthesis of 3-aryl-4-hydroxybenzonitriles, 1771-6

## BENZOPYRANONE

Substituted 4H-1-benzopyran-4-ones (chromones): synthesis via palladium-catalysed coupling of their halogeno derivatives with alkenes, 2597-604
BENZOPYRANOPYRIDINE
The Hantzsch synthesis with salicylaldehyde revised., 563-6
BENZOPYRONE
Studies on the syntheses of heterocyclic compounds containing benzopyrone. Part 5. Total synthesis of fulvic acid, 389-94
Studies on the syntheses of heterocyclic compounds containing benzopyrone. Part 6. Biomimetic total synthesis of citromycetin, 395-8
BENZOPYRROLE
The synthesis of heteroaromatic prostacyclin analogues via keto alkyne cyclisation, 1825-32
BENZOPYRYLIUMOLATE
On the preparation and chemical reactivity of 2-benzopyrylium-4olate, 195-202
BENZOQUINOLINE
Photolysis of 1-aryl-1,2,3-triazoles; rearrangement via 1 H -azirines, 413-22
BENZOQUINOLIZINE
Stereocontrolled construction of octahydroquinolizines, octahydroindolizines, hexahydrobenzo[a]quinolizines, and an octahydroindolo [2,3-a]quinolizine by an intromolecular double Michael reaction: synthesis of $( \pm)$-epilupinine, 1719-26
BENZOQUINONE
Synthesis of substituted dibenzophospholes. Part 5. Synthesis of intermediates for 4- and 6-aryl substituents, 851-8
Regiospecific arylation of 1,4-benzoquinone cyanohydrin phosphate: synthesis of 3-aryl-4-hydroxybenzonitriles, 1771-6

## BENZOTHIADIAZINE

Synthesis of 1,2,4-benzothiadiazines via readily generated iminium ions, 1421-2
BENZOTHIAZINE
Base-promoted cyclisation of hydrazonoyl chlorides bearing an alkynylsulphonyl group, 399-402
Synthesis of pyrrolo [2,1-c][1,4]benzothiazines by annellation of 3-alk oxycarbonylmethylene- 4 H -1,4-benzothiazines ( $\beta$ enamine esters) with dimethyl acetylenedicarboxylate, 102732
BENZOTHIAZOLE
Carbanions derived from 2-alkylthiobenzothiazoles. A novel $\alpha-$ lithiomethyl mercaptan synthon for mercaptomethylation, 76974
N -monomethylation of primary amines via intermediate benzothiazol-2( $3 H$ )-imines, 2539-42
BENZOTHIAZOLINE
Lewis acid-promoted conjugate reduction of $\alpha, \beta$-unsaturated carbonyl compounds by 2-phenylbenzothiazoline (2-phenyl-2,3dihydrobenzothiazole), 699-706
BENZOTHIOPHENE
The synthesis of heteroaromatic prostacyclin analogues via keto alkyne cyclisation, 1825-32
BENZOTRIAZOLE
Cyclo-octa[def]carbazole, a new heterocyclic paratropic ring system, 403-12
The chemistry of $N$-substituted benzotriazoles. Part 1. 1(Chloromethyl)benzotriazole, 781-90
The chemistry of $N$-substituted benzotriazoles. Part 2. Reactions of benzotriazole with aldehydes and aldehyde derivatives. 1-( $x$ -hydroxyalkyl)-, 1-(x-alkoxyalkyl)-, and 1-(xacyloxyalkyl)benzotriazoles, 791-8
The chemistry of benzotriazole. Part 3. The aminoalkylation of benzotriazole, 799-804
The chemistry of $N$-substituted benzotriazoles. Part 4. A novel and versatile method for the mono- $N$-alkylation of aromatic and heteroaromatic amines, 805-10
The chemistry of $N$-substituted benzotriazoles. Part 5. Reactions of benzotriazole with aldehydes and thionyl chloride- formation of (benzotriazol-1-yl)-1-chloroalkanes and bis(benzotriazolyl)alkanes, 811-8
The chemistry of $N$-substituted benzotriazoles. Part 6. A new synthetic route to aromatic ketones, 819-24
The chemistry of $N$-substituted benzotriazoles. Part 7. The isomeric composition and mechanism of interconversion of some N (aminomethyl)benzotriazole derivatives, 2673-80
BENZOTRITHIADIAZEPINE
Organic heterocyclothiazenes. Part 3. Synthesis and structure of 1,3,5,2,4-trithiadiazepines, 211-6
BENZOXAZINONE
Photocycloaddition of quinoxalin-2-ones and benzoxazin-2-ones to aryl alkenes, 2611-6
BERBERASTINE
Regioselective total synthesis of $( \pm)$-berberastine, 2565--8
BIARYL
3-Aryl-1-tetrazol-5-yltriazenes, bench-stable arenediazonium ion synthons: synthesis of biaryls and aryl halides, 1039-42
BIARYL SYNTHESIS
Synthesis of substituted dibenzophospholes. Part 6. Preparation of symmetrical and non-symmetrical quaterphenyl intermediates, 859-66
BIBENZOCYCLOBUTYLIDENE
Synthesis and rearrangements of 1,1'-bi(benzocyclobutylidene) and its derivatives, 1561-6
BICOUMARIN
Studies on fungal products. Part 10. Isolation and structures of novel bicoumarins, desertorins A, B, and C, from Emericella desertorum, 1735-8
BICYCLOBUTANE
Regioselective ring-opening and dimerisation of methyl 3,3dimethylcyclopropenecarbox ylate, 1609-12
BICYCLODECANE
Reaction of ( $1 S, 6 S$ )-1,7,7-trimethyl-2,3-dimethylene-transbicyclo[4.4.0]decane with thallium(III) acetate; a new route to ( - )-warburganal and $(+$ )-euryfuran, 2137-40

## BICYCLOHEPTANONE

Photolysis of 2,3-epoxy-7,7-diphenylbicyclo[3.2.0]heptan-6-ones and 2-exo, 3-exo-dihydroxy-7,7-diphenylbicyclo[3.2.0]heptan-6-one, 85-90

## BICYCLOHEPTANONE (contd)

Resolution of 7,7-dimethylbicyclo[3.2.0]hept-2-en-6-one using Mortierella ramanniana and $3 x, 20 \beta$-hydroxy-steroid dehydrogenase, photochemistry of 3-hydroxy-7,7dimethylbicyclo[3.2.0] heptan-6-ones, and the synthesis of $(+)$ eldanolide, 903-8
BICYCLONONANE
Synthesis of stable analogues of $\mathrm{TXA}_{2}, 137-50$
Condensed tannins. Base-catalysed reactions of polymeric procyanidins with phloroglucinol: intramolecular rearrangements, 1875-82
BICYCLO-OCTANE
Synthesis of stable analogues of TXA $2,137-50$
BICYCLO-OCTENONE
Thermal cycloaddition of $N$-arylmaleimides to phenols: the convenient synthesis of bicyclo[2.2.2]oct-2-en-5-one and tricyclo[3.3.0.0 ${ }^{2,8}$ ] octan-2-one derivatives from phenols, 1147-52
BIGNONIACEAE
A revised structure for dehydrotectol and tecomaquinone I, 1821-4
BILADIENE
Cyclizations of terminally substituted $a, c$-biladiene salts to give meso-substituted porphyrins, 1229-36

## BILINDIONE

Autoxidation and solvolysis products of
octaethylverdohaemochrome, 1183-8

## BILIRUBIN

Propentdyopents [5-(2-oxo-2 H -pyrrol-5-ylmethylene)pyrrol-2(5H)ones] and related compounds. Part 2 . The $Z \rightleftarrows E$
photoisomerisation of pyrromethenone systems, 1383-8

## BILIVERDIN

Synthetic and biosynthetic studies of porphyrins. Part 11. The synthesis of meso oxygenated protoporphyrins, 307-12
BIOHYDROGENATION
Biohydrogenation of unsaturated compounds by Saccharomyces cerevisiae. Part 1. Stereochemical aspects of the reaction and preparation of useful bifunctional chiral synthons, 17438
Biohydrogenation of unsaturated compounds by Saccharomyces cerevisiae. Part 2. (S)-(-)-ethyl 4-hydroxy-3-methylbutanoate as a chiral synthon for the preparation of ( $25 S$ )-26-
hydroxycholesterol, 1749-52
BIOMIMETIC REACTION
Synthesis of heterocycles via enamines. Part 12. Intramolecular additions of nucleophiles to 1,4 -dihydropyrimidine- $2(3 \mathrm{H})$-thione derivatives: single-step synthesis of condensed heterocyclic compounds, 261-4
BIOMIMETIC TOTAL SYNTHESIS
Studies on the syntheses of heterocyclic compounds containing benzopyrone. Part 6. Biomimetic total synthesis of citromycetin, 395-8
BIOSYNTHESIS
Biosynthesis of the polyether ionophore antibiotic monensin A : assignment of the carbon-13 and proton n.m.r. spectra of monensin A by two-dimensional spectroscopy. Incorporation of oxygen-18 labelled molecular oxygen, 27-36
Synthesis of model compounds of some biogenetic precursors of aflatoxin $\mathrm{B}_{1}$, 163-8
Pyrrolizidine alkaloid biosynthesis. Incorporation of ${ }^{13} \mathrm{C}$-labelled precursors into rosmarinine, 177-80
Synthetic and biosynthetic studies of porphyrins. Part 7. The action of coproporphyrinogen oxidase on coproporphyrinogen-IV: syntheses of protoporphyrin-XIII, mesoporphyrin XIII, and related tricarboxylic porphyrins, 265-76
Synthetic and biosynthetic studies of porphyrins. Part 8. Syntheses of hepta-, hexa-, and penta-carboxylic porphyrins related to uroporphyrin-I, 277-86
Synthetic and biosynthetic studies of porphyrins. Part 9. Synthesis of isocoproporphyrin, dehydroisocoproporphyrin, and deethylisocoproporphyrin, 287-98
Synthetic and biosynthetic studies of porphyrins. Part 10. Syntheses of porphyrins with acetic, propionic, and butyric acid side-chains for biosynthetic studies, 299-306
Synthetic and biosynthetic studies of porphyrins. Part 11. The
synthesis of meso oxygenated protoporphyrins, 307-12
Synthesis and stereochemistry of 23,24-dihydrocalysterol:
implications for marine sterols of a unified biosynthetic scheme involving protonated cyclopropanes, 1283-90
Synthesis and stereochemistry of ficisterol and norficisterol: biosynthetic implications, 1291-306

Sterols in marine invertebrates. Part 57. Stereostructure, synthesis, and acid-catalysed isomerization of hebesterol-a biosynthetically significant cyclopropyl-containing marine sterol, 1307-18
Hydrolysis of bismetallic complexes of linalyldiphosphate and their participation in the biosynthesis of cyclic monoterpenes, 1479-84
The biosynthesis of tuberin from tyrosine and glycine; observations on the stereochemistry associated with the conversion of glycine through methylenetetrahydrofolate into methenyltetrahydrofolate, 1593-8
Synthetic studies relevant to biosynthetic research on vitamin $B_{12}$. Part 4. Development of the photochemical route to isobacteriochlorins, 1667-78
Synthetic studies relevant to biosynthetic research on vitamin $\mathrm{B}_{12}$. Part 5. Synthesis of ( $R S$ )-ring-B imide, 1679-88
Biosynthesis of porphyrins and related macrocycles. Part 28. Development of a pulse labelling method to determine the $C$ methylation sequence for vitamin $\mathrm{B}_{12}$., 1689-96
In vitro production and biosynthesis of fomajorin D and S by Fomes annosus (Fr.) Cooke, 1869-72
Pyrrolizidine alkaloids. Stereochemistry of the enzymic processes involved in the biosynthesis of rosmarinecine., 2195-202
Synthesis of 2,3,5-trihydroxyphenylprop-1-ene and its 4-chloro-, 6-chloro-, and 4,6-dichloro-derivatives, 2209-16
Metabolites of Aspergillus ustus. Part 4. Stable-isotope labelling studies on the biosynthesis of the austalides, 2253-8

## BIPHENYL

Synthesis of substituted dibenzophospholes. Part 7. Regiospecific synthesis of 4,6-diaryl-3,7-dioxydibenzophospholes from 2, 2'4, $4^{\prime}$ tetranitrobiphenyl, 867-70
$X$-Ray structural studies of stereoisomeric bi $(14 \mathrm{H}$ dibenzo $[4,5: 6,7][1,3]$ diazepino $[2,1-a]$ isoindol-14-ylidene)s obtained from the reaction of $2,2^{\prime}$-diaminobiphenyl with $o$ phthalaldehyde, 1763-70

## BIPHENYLENE

The rearrangement of a tetrahydrobiphenylene derivative to a bridged benzocycloheptene, 2443-6
BIPYRIDYL
Synthesis of bipyridyl-, viologen-, and quinone-bridged porphyrins, 2385-94
BIRADICAL
Use of the diazoalkane-thione reaction in the synthesis of a vinyltrimethylenemethane precursor, 2497-504

## BISMUTH

The chemistry of pentavalent organobismuth reagents. Part 7. The possible role of radical mechanisms in the phenylation process for bismuth(v), and related lead(IV), iodine(III), and antimony(V) reagents, $241-50$
The chemistry of pentavalent organobismuth reagents. Part 8 . Phenylation and oxidation of alcohols by tetraphenylbismuth esters, 251-60

## BITHIENYL

Photochemical synthesis of bithienyl derivatives, 1777-80
BONDING STRENGTH
Synthesis and adhesive studies of marine polypeptides, 613-8
BOP REAGENT
Renin substrates. Part 2. Rapid solid phase synthesis of the ratine sequence tetradecapeptide using BOP reagent, 1915-20

## BORNESITOL

The allyl group for protection in carbohydrate chemistry. Part 20. Synthesis of 1L-1-O-methyl-myo-inositol $[(+)$-bornesitol $]$ by resolution of $( \pm)$-1,2,4-tri- $O$-benzyl-myo-inositol, 1757-62
BRACKENRIDGEA ZANGUEBARICA
Medicinal plants of southern Africa. Part 1. Dimeric chalcone-based pigments from Brackenridgea zanguebarica, 2809-14
BROMINATION
Bromination of certain aryl substituted pyrrolidines, 1049-52
BURST KINETICS
Metal-assisted reactions: Part 19. Burst kinetics in heterogeneous catalytic transfer hydrogenolysis, 1069-76
BUTANEDIONE
Carbon-carbon bond formation using hypervalent iodine under Lewis acid conditions: scope of the method for the synthesis of butane-1,4-diones, 559-62
BUTANOL
Stereoselective olefin formation from the dehydration of $1-(p-$ alkoxyphenyl)-1,2-diphenylbutan-1-ols: application to the synthesis of tamoxifen, 1011-6

## BUTENE

Cinnolines. Part 1. Widman-Stoermer reactions of functionalised 2-phenylbut-2-enes to give cinnolinecarbaldehydes, 1541-6
Synthesis of thiazolidinones from 1,4-dithiocyanatobut-2-enes and their use as masked 2-amino-1-mercaptobut-3-enes, 2729-36

## BUTYLATION

Metacyclophanes and related compounds. Part 16. Preparation of 8 -fluoro-t-butyl[2.2]metacyclophanes and their treatment with aluminium chloride-nitromethane in benzene, $1-8$
CADAVERINE
Application of ${ }^{2} \mathrm{H}$ n.m.r. spectroscopy to study the incorporation of enantiomeric ${ }^{2} \mathrm{H}$-labelled cadaverines into quinolizidine alkaloids, 105-10
CALABAR BEAN ALKALOID
Application of a tandem electrocyclic [3,3]sigmatropic reaction of $o$-quinodimethane to the synthesis of Calabar bean alkaloids. Part 2. First total synthesis of ( $\pm$ )-geneserine, 2491-6

## CALIXARENE

New syntheses of calixarene-p-sulphonates and p-nitrocalixarenes, 2297-300
CALYSTEROL
Synthesis and stereochemistry of 23,24-dihydrocalysterol: implications for marine sterols of a unified biosynthetic scheme involving protonated cyclopropanes, 1283-90
CAMPHANIC ACID
The allyl group for protection in carbohydrate chemistry. Part 20. Synthesis of $1 \mathrm{~L}-1-\mathrm{O}$-methyl-myo-inositol [ $(+)$-bornesitol $]$ by resolution of $( \pm)$-1,2,4-tri- $O$-benzyl-myo-inositol, 1757-62
CAPSULAR POLYSACCHARIDE
Synthesis of the trisaccharide component of the repeating unit of the capsular polysaccharide of Streptococcus pneumoniae Type 19F, 2745-8
CARBACEPHAM
New approaches to the synthesis of $\beta$-lactam antibiotics, 1237-42
CARBAMATE
Reactions of carbamyl (urethanyl) radicals: intramolecular aromatic additions, 1243-6
CARBAMATE SYNTHESIS
Participation of ambident neighbouring groups in hypobromous acid addition to some steroidal olefins. Competition of electronic and stereoelectronic effects, 1969-74

## CARBAMORPHINAN

Condensed cyclic and bridged-ring systems. Part 13. Synthesis of the insect attractant hydrocarbon, 9a-carbamorphinan, and $X$-ray structural analyses of 9a-carbamorphinan-10-one and 9a-carba-14x-morphinan-10-one, 2109-8
CARBANION
Studies on selected transformations of some fluoromethanephosphonate esters, 181-6
Carbanions derived from 2-alkylthiobenzothiazoles. A novel $x$ lithiomethyl mercaptan synthon for mercaptomethylation, 769-74
Stereoselective synthesis of trans-2-aryl-3-(2-pyridyl)aziridines from an $x$-silyl carbanion, 1489-94
CARBAPENAM
New approaches to the synthesis of $\beta$-lactam antibiotics, 1237-42 CARBAPENEM

Total synthesis of analogues of the $\beta$-lactam antibiotics. Part 3. 2Ethoxycarbonyl derivatives of carbapen-1-em-3-exo-carboxylates and carbapenam-3-exo-carboxylates, 2361-70
Stereospecific synthesis of a chiral intermediate for the preparation of thienamycin, penems, and carbapenems: use of the nitro group as a hydroxy protecting group, 2637-42
CARBENE
Photolysis of 1-aryl-1,2,3-triazoles; rearrangement via 1 H -azirines, 413-22
Addition of arylsulphonylcarbenes to benzene, 715-6
Reaction of dimethylvinylidene carbene with methylpyrroles, 134752
Regioselective ring-opening and dimerisation of methyl 3,3dimethylcyclopropenecarboxylate, 1609-12
Synthesis of [6] (2,4)pyridinophanes, 2829-32

## CARBOCYCLASE

Hydrolysis of bismetallic complexes of linalyldiphosphate and their participation in the biosynthesis of cyclic monoterpenes, 1479-84

## CARBODI-IMIDE

New heterocyclization reactions for the preparation of fused [1,2,4]triazoles: synthesis of $1,2,4$-triazolo [4,3-b] [1,2,4] triazole derivatives from 4 -amino-1,2,4-triazoles and carbodi-imides or via iminophosphoranes and disubstituted thioureas, 2667-72

## CARBOHYDRATE

Model studies of histrionicotoxin. The synthesis of the 1azaspiro[5.5] undecane rings system from carbohydrate starting materials, 21-6
The allyl group for protection in carbohydrate chemistry. Part 18. Allyl and benzyl ethers of myo-inositol. Intermediates for the synthesis of myo-inositol trisphosphates, 423-30
The allyl group for protection in carbohydrate chemistry. Part 19. The coupling of allyl $2,3-\mathrm{di}-O$-methyl-4- $O$-(3,6-di- $O$-methyl- $\beta$-D-glucopyranosyl)- $\alpha$-L-rhamnopyranoside to bovine serum albumin. Preparation of a diagnostic reagent for antibodies to the major glycolipid of Mycobacterium leprae (the leprosy bacillus) in human sera, 1165-70
The allyl group for protection in carbohydrate chemistry. Part 20. Synthesis of 1L-1-O-methyl-myo-inositol [ $(+$ )-bornesitol $]$ by resolution of $( \pm)$-1,2,4-tri- $O$-benzyl-myo-inositol, 1757-62
The allyl group for protection in carbohydrate chemistry. Part 21. ( $\pm$ )-1,2:5,6- and ( $\pm$ )-1,2:3,4-di- $O$-isopropylidene-myo-inositol. The unusual behaviour of crystals of $( \pm)-3,4-\mathrm{di}-\mathrm{O}$-acetyl-1,2,5,6-tetra- $O$-benzyl-myo-inositol on heating and cooling: a 'thermosalient solid', 2411-4
The total synthesis of $(-)$-litsenolides $\mathrm{C}-1$ and $\mathrm{C}-2,2681-8$

## CARBONYLATION

Carbonylation of aryl halides and vinyl bromides mediated by tetracarbonylcobalt anion, 1021-6
Reaction of diazonium salts with transition metals. Part 13. Palladium-catalyzed carbonylative coupling of arenediazonium salts with organotin reagents to give aromatic ketones, 15114

## CARBONYL REACTIVITY

Enhanced carbonyl reactivity and conformational effects in peridioxocycloalka[de]naphthalenes, 2437-42

## CARBONYL REDUCTION

Lewis acid-promoted conjugate reduction of $\alpha, \beta$-unsaturated carbonyl compounds by 2-phenylbenzothiazoline (2-phenyl-2,3dihydrobenzothiazole), 699-706

## CARBOXYLATION

Catalysis by palladium salts. Part 2. Palladium-catalysed carboxylation with carbon monoxide of aromatic compounds working under mild conditions, 2625-30
CARONALDEHYDE
Chiral route to cis-caronaldehyde from D-mannitol, 91-8
CARRIER
Specific $\mathrm{Ag}^{+}$ion binding and transport properties of 'tripod' type open-chain cryptands, 1697-700
CATALYSIS
Gas-liquid phase-transfer catalysis: Wittig-Horner reaction in heterogeneous conditions, 713-4
Reaction of $\alpha$-halogeno ketones with carbonyl compounds promoted by $\mathrm{CeI}_{3}, \mathrm{CeCl}_{3}-\mathrm{NaI}$, or $\mathrm{CeCl}_{3}-\mathrm{SnCl}_{2}, 1473-8$
Ruthenium(II)- and rhenium(III)-catalysed addition of tetrahalogenomethanes to alkenes and $1, \omega$-dienes. Stereoselective formation of cis-1,2-disubstituted cyclopentanes from 1,6-dienes, 1515-20
Catalysis by palladium salts. Part 2. Palladium-catalysed carboxylation with carbon monoxide of aromatic compounds working under mild conditions, 2625-30
CATALYTIC TRANSFER HYDROGENOLYSIS
Metal-assisted reactions: Part 19. Burst kinetics in heterogeneous catalytic transfer hydrogenolysis, 1069-76
CATECHIN
Synthesis of condensed tannins. Part 19. Phenol oxidative coupling of $(+)$-catechin and $(+)$-mesquitol. Conformation of bis $(+)$ catechins, 2345-52
CEPHALOSPORIN
Preparation and properties of $7 x$-formamido cephalosporins, 4556
CEPHAM
Preparation and properties of $7 x$-formamido cephalosporins, 4556
Studies on amino acid derivatives. Part 7. General method for the synthesis of penam and cepham and their substituted derivatives., 1845-52

## CERIUM CATALYST

Reaction of $x$-halogeno ketones with carbonyl compounds promoted by $\mathrm{CeI}_{3}, \mathrm{CeCl}_{3}-\mathrm{NaI}$, or $\mathrm{CeCl}_{3}-\mathrm{SnCl}_{2}, 1473-8$
CHAIN FOLDING
Studies on the synthesis of linear aliphatic compounds. Part 3. The synthesis of paraffins with very long chains, 2455-64

## CHALAURENOL

Metabolism of $2^{\prime}, 4,4^{\prime}$-trihydroxychalcone in Amorpha fruticosa seedlings; structure and role of chalaurenol, a novel heterocyclic enol ether formed by enzymic oxidation, 2775-82
Synthesis of $4^{\prime}$ - $O$-methyl- and $4^{\prime}, 6-\mathrm{di}-O$-methyl-chalaurenol. 27836
CHALCONE
Medicinal plants of southern Africa. Part 1. Dimeric chalcone-based pigments from Brackenridgea zanguebarica, 2809-14
CHARGE-TRANSFER COMPLEX
Di-heteroarylethylenes: synthesis and donor properties, 2631-6

## CHARGE TRANSFER

Selectivity and charge transfer in photoreactions of donor-acceptor systems. Part 10. meta Photocycloadditions of $m$ bis(trifluoromethyl)benzene and trifluoromethyl benzonitriles to olefins, 2333-8
CHIRAL AUXILIARIES
The preparation and absolute configuration of the optically active forms of the diastereoisomers of 2-(1-phenylethyl)amino-1phenylethanol and their use as chiral auxiliaries in the asymmetric reduction of acetophenone with modified lithium aluminium hydrides, 601-6

## CHIRAL AZIRIDINATION

Chiral aziridination of $\alpha, \beta$-unsaturated esters and ketones using $N$ nitrenes in the presence of trifluoroacetic acid, 2803-8

## CHIRAL DIENOLATE

Chiral dienolates: formation and stereoselective $\alpha$-alkylation of the lithium dienolate derived from $(Z)-\left[\left(\eta^{5}-\right.\right.$
$\left.\mathrm{C}_{5} \mathrm{H}_{5}\right) \mathrm{Fe}(\mathrm{CO})\left(\mathrm{PPh}_{3}\right) \mathrm{COCH}=\mathrm{CHMe}$. $X$-Ray crystal structure of $(R S)-(Z)-\left[\left(\eta^{5}-\mathrm{C}_{5} \mathrm{H}_{5}\right) \mathrm{Fe}(\mathrm{CO})\left(\mathrm{PPh}_{3}\right) \mathrm{COCH}=\mathrm{CHMe}\right]$, 489-94
CHIRAL REDUCTION
Synthesis of C-19-chiral steroids. Preparation of (19R); (19S) and (19RS)-3ß-hydroxy[19- $\left.{ }^{2} \mathrm{H}_{1}, 19-{ }^{3} \mathrm{H}_{1}\right]$ androst-5-en-17-ones, 61 70
CHIRAL SYNTHON
Biohydrogenation of unsaturated compounds by Sacharomyrces cererisiae. Part 1. Stereochemical aspects of the reaction and preparation of useful bifunctional chiral synthons, $1743-8$
Biohydrogenation of unsaturated compounds by Saccharomyces cerevisiae. Part 2. ( $S$ )-( - )-ethyl 4-hydroxy-3-methylbutanoate as a chiral synthon for the preparation of ( $25 S$ )-26-
hydroxycholesterol, 1749-52

## CHOLESTEROL

Synthesis of $(25 R)-\left[26-{ }^{2} \mathrm{H}_{1}\right]$ cholesterol and ${ }^{1} \mathrm{H}$ n.m.r. and h.p.l.c. resolution of ( $25 R$ )- and ( $25 S$ )-26-hydroxycholesterol, 1713-8
Biohydrogenation of unsaturated compounds by Saccharomyces cerevisiae. Part 2. ( $S$ )-( - -ethyl 4-hydroxy-3-methylbutanoate as a chiral synthon for the preparation of ( $25 S$ )-26-
hydroxycholesterol, 1749-52
CHOLESTEROL METABOLISM
The synthesis of some cholesterol derivatives as probes for mechanisms of cholesterol metabolism, 595-600
CHORISMATE MUTASE
The shikimate pathway. Part 7. Chorismate mutase: towards an enzyme model, 2765-74
CHROMENE
Synthesis of the phytoalexin ( $\pm$ )-phaseollin: 3-phenylthiochromans as masked $2 H$-chromenes and $o$-prenyl phenols, 431-8

## CHROMIUM

Tetrahydroisoquinolines. Part 3. Stereoselective synthesis of cis- and trans-1,4-disubstituted $N$-methyl-1,2,3,4-tetrahydroisoquinolines as their tricarbonylchromium complexes, 689-94
The diastereoselective functionalisation of arene tricarbonylchromium complexes containing a benzylic heteroatom substituent, 1805-12
CHROMIUM COMPLEX
Electrophilic substitution in (arene)tricarbonylchromium complexes. Part 1., 747-52

## CHROMONE

Studies on chromone derivatives. Novel 1,3 dipolar cycloadditions of 4-oxo-1-benzopyran-3-carbaldehyde imines and imine oxides, 1995-8
Substituted 4H-1-benzopyran-4-ones (chromones): synthesis via palladium-catalysed coupling of their halogeno derivatives with alkenes, 2597-604
CINCHONA ALKALOID
Enantiotopic-group differentiation. Catalytic asymmetric ringopening of prochiral cyclic acid anhydrides with methanol, using cinchona alkaloids, 1053-8

## CINNAMATE

Vinyl azides in heterocyclic synthesis. Part 5. Thermal and photochemical decomposition of azidocinnamates containing ortho-cycloalkylidene substituents, 913-20
CINNOLINE
Cinnolines. Part 1. Widman-Stoermer reactions of functionalised 2-phenylbut-2-enes to give cinnolinecarbaldehydes, 1541-6

## CINNOLINE OXIDE

$o$-Nitrobenzylidene compounds. Part 3. Formation of 4-arylamino-3-methoxycinnoline 1 -oxides from $N$ - $o$-nitrobenzylideneanilines, cyanide ion, and methanol: the intermediacy of 2-aryl-3-cyano2 H -indazole 1 -oxides, 495-500

## CITRININ

The structure of citrinin in civo, $2743-4$

## CITROMYCETIN

Studies on the syntheses of heterocyclic compounds containing benzopyrone. Part 6. Biomimetic total synthesis of citromycetin, 395-8
CITRONELLOL
Asymmetric conjugate addition to unsaturated chiral amido alcohols using Grignard reagents co-ordinated with tertiary amines or DBU. Preparation of optically active 3-substituted carboxylic acids and ( $S$ )-(-)-citronellol, 1909-14

## CLAISEN REARRANGEMENT

Synthesis and stereochemistry of ficisterol and norficisterol: biosynthetic implications, 1291-306

## CLAVULANIC ACID

Wittig reactions with $\beta$-lactam carbonyl functions. The effect of C 7 substitution on the chemistry of penicillins and clavulanic acid derivatives, 1369-76

## COBALT

Carbonylation of aryl halides and vinyl bromides mediated by tetracarbonylcobalt anion, 1021-6
COBYRINIC ACID
Biosynthesis of porphyrins and related macrocycles. Part 28. Development of a pulse labelling method to determine the $C$ methylation sequence for vitamin $\mathrm{B}_{12}$., 1689-96
COMPLEX FORMATION
The formation of complexes between aza derivatives of crown ethers and primary alkylammonium salts. Part 9. Bicyclic derivatives of diaza crown ethers, 1921-8
COMPUTER GRAPHICS
Studies on conformationally restricted, disiloxane bridged analogues of the enkephalins, 1107-16
CONFORMATION
Nuclear magnetic resonance and conformational studies on monoacetylated methyl D-gluco-and D-galacto-pyranosides, 377-84
Studies on conformationally restricted, disiloxane bridged analogues of the enkephalins, 1107-16
Conformation dependent photochemistry of dienes. Substituent effects on the photochemical reactions of some 4-acyloxy-2-azabuta-1,3-dienes, 2663-6
CONFORMATIONAL ANALYSIS
Four isomeric 7-isopropyloctahydro- 4 H -inden-4-ones, 365-8
Asymmetric induction in addition of $N$-nitrenes to alkenes: oxidation of 3-amino-2-(1,2,2-trimethylpropyl)quinazolin-4(3H)one in the presence of $x$-methylene- $\gamma$-butyrolactone: conformational analysis of the aziridines formed and comparison with alkanoylated cyclopropylamines, 2797-802
CONFORMATIONAL EFFECT
Enhanced carbonyl reactivity and conformational effects in peridioxocycloalka[de]naphthalenes, 2437-42
CONFORMATIONAL STABILITY
Synthesis of condensed tannins. Part 20. Cycloconformations and conformational stability among derivatives of 'angular' tetraflavanoid profisetinidins, 2353-60
CONJUGATE ADDITION
Asymmetric conjugate addition to unsaturated chiral amido alcohols using Grignard reagents co-ordinated with tertiary amines or DBU. Preparation of optically active 3 -substituted carboxylic acids and ( $S$ )-( - --citronellol, 1909-14
CONJUGATION
Synthesis and properties of methano bridged tetradehydro[18]annulene, --[20]annulene, -[22]annulene, -[24]annulene, and the related [1,3]cyclophanpolyenediyne compounds, 831-44

## COPPER COMPLEX

Cyanide substitution in aryl halides by copper(I) complexes derived from formamide and from formaldehyde oxime, 619-22

## COPPER-PROMOTED CYCLISATION

Synthesis of benzocarbacephem and benzocarbapenem derivatives by copper-promoted intramolecular aromatic substitution, 1899908
COPROPORPHYRINOGEN OXIDASE
Synthetic and biosynthetic studies of porphyrins. Part 7. The action of coproporphyrinogen oxidase on coproporphyrinogen-IV: syntheses of protoporphyrin-XIII, mesoporphyrin XIII, and related tricarboxylic porphyrins, 265-76

## CORCHORUS ACUTANGULUS

Triterpenoid glycosides of Corchorus acutangulus Lam., 629-34
CORCHORUSIN
Triterpenoid glycosides of Corchorus acutangulus Lam., 629-34

## COUMARIN

Synthesis of the Mammea coumarins. Part 1. The coumarins of the mammea A, B, and C series, 317-32
Synthesis of the Mammea coumarins. Part 2. Experiments in the mammea $E$ series and synthesis of mammea E/AC, 333-44
Synthesis of the Mammea coumarins. Part 3. The insecticidal coumarins of the mammea E series, mammea $\mathrm{D} / \mathrm{BB}$, and a dihydrocoumarin of the mammea C series, 345-52
Synthesis of the Mammea coumarins. Part 4. Stereochemical and regiochemical studies, and synthesis of $(-)$-mammea $\mathrm{B} / \mathrm{BB}, 353-$ 8
Synthesis of the Mammea coumarins. Part 1. The coumarins of the Mammea A, B, and C series, 1421-2
Selective ortho-alkylation of phenols with sulphoxides via
$[2,3]$ sigmatropic rearrangement: synthesis of coumarins, 1753-6

## CROCONIC ACID

Reaction of di-t-butoxyethyne with $\mathrm{Fe}_{2}(\mathrm{CO})_{9}: X$-ray crystal structure of (tetra-t-butoxycyclopentadienone)tricarbonyliron(0) and an improved formal synthesis of hydrocroconic acid and the croconate dianion, 2749-52
CROTONATE
Preparation and n.m.r. spectra of some hydrazono-malonates and -crotonates, 649-52

## CROTONECINE

Enantiospecific synthesis of $(+)$-retronecine, $(+)$-crotonecine, and related alkaloids, 2377-84

## CROWN-6

Halogenation of phenols and phenyl ethers with potassium halides in the presence of 18 -crown- 6 on oxidation with $m$ chloroperbenzoic acid, 1423-8

## CROWN ETHER

Photoresponsive crown ethers. Part 18. Photochemically 'switchedon' crown ethers containing an intra-annular azo substituent and their application to membrane transport, 449-56
Specific $\mathrm{Ag}^{+}$ion binding and transport properties of 'tripod' type open-chain cryptands, 1697-700
The formation of complexes between aza derivatives of crown ethers and primary alkylammonium salts. Part 9. Bicyclic derivatives of diaza crown ethers, 1921-8

## CRYPTAND

The shikimate pathway. Part 7. Chorismate mutase: towards an enzyme model, 2765-74
CRYPTOSPORIOPSINOL
Synthesis of 2,3,5-trihydroxyphenylprop-1-ene and its 4-chloro-, 6-chloro-, and 4,6-dichloro-derivatives, 2209-16

## CRYSTAL STRUCTURE

Hydrolysis products of flavins (isoalloxazines), 75-84
Synthesis of stable analogues of TXA $2,137-50$
Ring- $C$ aromatic steroids. Part 5. C-17 Hydroxylation and sidechain degradation of 18 -nor- $17 \alpha(\mathrm{H})$ - and $-17 \beta(\mathbf{H})$-pregna-4,8,11,13-tetraene-3,20-dione. $X$-Ray structure of $17 \beta$-hydroxy-18-nor-17 $\beta(\mathbf{H})$-pregna-4,8,11,13-tetraene-3,20-dione, 169-72
Synthesis of the Mammea coumarins. Part 4. Stereochemical and regiochemical studies, and synthesis of $(-)$-mammea B/BB, 3538
Synthesis of triphenylene 1,2-oxide (1,2-epoxy-1,2-
dihydrophenylene) and absolute configuration of the trans-1,2dihydro diol metabolite of triphenylene. Crystal structure of $(-)$ (1 $R, 2 R$ )-trans-2-bromo-1-menthyloxyacetoxy-1,2,3,4tetrahydrotriphenylene, 369-76
Chiral dienolates: formation and stereoselective $\alpha$-alkylation of the lithium dienolate derived from $(Z)-\left[\left(\eta^{5}-\right.\right.$
$\left.\left.\mathrm{C}_{5} \mathrm{H}_{5}\right) \mathrm{Fe}(\mathrm{CO})\left(\mathrm{PPh}_{3}\right) \mathrm{COCH}=\mathrm{CHMe}\right] . X$-Ray crystal structure of
$(R S)-(Z)-\left[\left(\eta^{5}-\mathrm{C}_{5} \mathrm{H}_{5}\right) \mathrm{Fe}(\mathrm{CO})\left(\mathrm{PPh}_{3}\right) \mathrm{COCH}=\mathrm{CHMe}\right], 489-94$
Reduction and stereochemical studies through n.m.r. and $X$-ray techniques of indolo $[2,1-b]$ quinazolines, $519-28$

Studies on sugar nitro-olefins. Part 7. Synthesis of 3-(alditol-1-yl)-1,2,3,5,6,7-hexahydro- and -1,5,6,7-tetrahydro-indol-4-ones. $X$-Ray molecular structure of (3S)-3-(1,2,3,4,5-penta- $O$-acetyl-D-galacto-pentitol-1-yl)-1,2,3,5,6,7-hexahydroindol-4-one, 581-8
Synthesis of substituted dibenzophospholes. Part 5. Synthesis of intermediates for 4- and 6-aryl substituents, 851-8
Regioselectivity in the photochemical ring contraction of 4-diazopyrazolidine-3,5-diones to give aza- $\beta$-lactams, 885-98
Synthesis of pyrrolo $[2,1-c][1,4]$ benzothiazines by annellation of 3-alkoxycarbonylmethylene-4H-1,4-benzothiazines ( $\beta$-enamine esters) with dimethyl acetylenedicarboxylate, 1027-32
2-Chloro-3,4-dihydroimidazole. Part 2. Synthesis of cyanines from 6-aryl-2,3-dihydro-6a $H$-imidazo $[1,2-a]$ pyrido $[1,2-c][1,3,5]$ triazin$5(6 H)$-ones. Crystal and molecular structure of 6-phenyl-2,3-dihydro-6a $H$-imidazo[1,2-a]pyrido[1,2-c][1,3,5]triazin-5(6H)-one, 1033-8
Oxidation of a nitronyl nitroxide by copper(II) ions: synthesis and $X$-ray diffraction characterization of 4,4,5,5-tet ramethyl-1-oxo-2-phenyl-4,5-dihydroimidazolium perchlorate $N(3)$-oxide, 1077-80
Reactions of xanthinium $N(7)$-ylides with olefinic dipolarophiles, 1211-20
Total synthesis and $X$-ray crystal structure of 13,14-didehydro-11-deoxy-11-methyl-15-oxoprostaglandin $\mathrm{E}_{1}, 1485-8$
Synthesis of some hexahydroazocino $[4,3-b]$ indoles, a tetra- and two hexahydropyrrolo $\left[1^{\prime}, 2^{\prime}: 1,2\right]$ pyrrolo $[3,4-b]$ indoles, and a tetrahydropyrrolo $\left[2^{\prime}, 1^{\prime}: 5,1\right]$ imidazo $[3,4-a]$ indole. Crystal structure determination of 1,2,3,4-tetrahydro-2-phenox ycarbonyl-7-phenylsulphonylazocino[4,3-b]indol-6( $5 H$ )-one, 1599-606
Regioselective ring-opening and dimerisation of methyl 3,3dimethylcyclopropenecarboxylate, 1609-12
Configuration of 1,10 -epoxyguaianolides: stereochemistry of $1,10-$ epoxy- $8 \alpha$-hydroxyachillin, 1641-4
Synthesis of $(25 R)-\left[26-{ }^{2} \mathbf{H}_{1}\right]$ cholesterol and ${ }^{1} \mathbf{H}$ n.m.r. and h.p.l.c. resolution of ( $25 R$ )- and ( $25 S$ )-26-hydroxycholesterol, 1713-8
$X$-Ray structural studies of stereoisomeric bi $(14 H$ dibenzo $[4,5: 6,7][1,3]$ diazepino $[2,1-a]$ isoindol-14-ylidene)s obtained from the reaction of $2,2^{\prime}$-diaminobiphenyl with $o$ phthalaldehyde, 1763-70
Synthesis of $(2 R, 3 S, 4 R)$-3,4-dihydroxyproline from D-ribonolactone; an approach to the synthesis of polyfunctionalised D-amino acids from sugar lactones. $X$-Ray molecular structures of 2 -azido-3,4-$\boldsymbol{O}-(R)$-benzylidene-2-deo xy-D-ribono-1,5-lactone, 2-azido-2-deoxy-D-ribono-1,5-lactone, and ( $2 R, 3 S, 3 R$ )-3,4-dihydroxyproline, 178592
The diastereoselective functionalisation of arene
tricarbonylchromium complexes containing a benzylic heteroatom substituent, 1805-12
Photolytic rearrangement of metronidazole to $N$-(2-hydroxyethyl)5 -methyl-1,2,4-oxadiazole-3-carboxamide. Crystal structure of its 4-nitrobenzoate derivative, 1817-20
Horner-Wittig reactions of $\beta$-aminoalkyl- and $\beta-N$ -
acylaminoalkyldiphenylphosphine oxides: synthesis of $N$-allyl amines and amides and 5-diphenylphosphinoyl-2-phenyl-5,6-dihydro-4H-1,3-oxazines, 1883-98
An unusual C-7 ortho ester from 6-epi-gibberellin $\mathrm{A}_{13} . X$-Ray molecular structure of gibberellene C-7 ortho ester, 1955-8
Pyrrole studies. Part 35. Aerial oxidation of 4-substituted 3-amino-2,5-dimethylpyrroles. An $X$-ray crystallographic and spectroscopic study of the oxidation products, 1959-62
Stereochemistry of the tetrahydroisopimaric acids: $X$-ray structure of methyl $8 \alpha$-isopimaran-18-oate, 1975-8
Neighbouring group participation in the reduction of the diterpenoid fujenal, 1987-90
The stereochemistry of some reactions at C-16 in gibberellins; an $X$-ray crystallographic study of the methyl esters of gibberellin $\mathrm{A}_{2}$ and gibberellin $\mathrm{A}_{9}$ hydrochloride, 1991-4
Pyrrolizidine alkaloid analogues. Synthesis of 10 -membered macrocyclic diesters of ( $\pm$ )-synthanecine A. $X$-Ray molecular structure of ( $\pm$ )-6,7-O,O-(succinyl)synthanecine A, 2069-72
Condensed cyclic and bridged-ring systems. Part 13. Synthesis of the insect attractant hydrocarbon, 9a-carbamorphinan, and $X$-ray structural analyses of 9a-carbamorphinan-10-one and 9a-carba$14 \alpha$-morphinan-10-one, 2109-8
Synthesis of thiogibberellins: $X$-ray molecular and crystal structure of 19,10-thio-3-epigibberellin $A_{1}, 2111-8$
Trifluoromethanethiolate ion. Part 2. Nucleophilic substitution in pentafluoropyridine. Synthesis and characteristics of trifluoromethylthio and trifluoromethylsulphonyl derivatives, 2119-24

## CRYSTAL STRUCTURE (contd)

Structural features and crystallographic examination of 5-acetyland 5-trifluoroacetyl-2-( $N, N$-disubstituted amino)thiazoles, 2305 10
An unexpected double cycloaddition of [1,2,4]triazolo[1,5a]pyrimidine $N$-ylide with activated acetylenes and alkenes, 2531-8
Cycloadducts of nitrones with isocyanates; 1,2,4- or 1,3,4oxadiazolidinones?, 2593-6
Interaction of thiophene S, N -ylides with dimethyl acetylenedicarboxylate, 2659-62
The chemistry of $N$-substituted benzotriazoles. Part 7. The isomeric composition and mechanism of interconversion of some $N$ (aminomethyl)benzotriazole derivatives, 2673-80
Enzyme-mediated $\mathrm{H}_{2} \mathrm{O}_{2}$ oxidation of ( $E$ )-stilbene-3,4-diol, 2719-22
Reaction of di-t-butoxyethyne with $\mathrm{Fe}_{2}(\mathrm{CO})_{9}$ : $X$-ray crystal structure of (tetra-t-butoxycyclopentadienone)tricarbonyliron(0) and an improved formal synthesis of hydrocroconic acid and the croconate dianion, 2749-52
Metabolism of $2^{\prime}, 4,4^{\prime}$-trihydroxychalcone in Amorpha fruticosa seedlings; structure and role of chalaurenol, a novel heterocyclic enol ether formed by enzymic oxidation, 2775-82

## CUPRATE

Synthesis of allenylsilanes from propargyl carbamates, 2269-74

## CUPRATE REAGENT

The 3,4 -dihydro- 2 H -pyran approach to $(+)$-milbemycin $\beta_{3}$. Part 1 . An alternative synthesis of $(2 S, 4 S, 6 R, 8 R, 9 S)$-2-formylmethyl-4-(dimethyl-t-butylsilyloxy)-8,9-dimethyl-1,7dioxaspiro[5.5]undecane, 2183-8
The 3.4-dihydro- 2 H -pyran approach to $(+)$-milbemycin $\beta_{3}$. Part 2. An improved synthesis of $(2 R, 4 S, 6 S, 8 R, 9 S)-2-[(5 R)-(2 E)-3-$ methyl-5-formyl-hex-2-en-1-yl]-8,9-dimethyl-4-(dimethyl-t-butylsilyloxy)-1,7-dioxaspiro[5,5]undecane, 2189-94
CYANAMIDE
Intramolecular functionalization of N -cyanamide radicals: synthesis of 1,4 -and $1,5-N$-cyanoepimino compounds, $937-44$
CYANIDE
Cyanide substitution in aryl halides by copper(1) complexes derived from formamide and from formaldehyde oxime, 619-22

## CYANIN

2-Chloro-3,4-dihydroimidazole. Part 2. Synthesis of cyanines from 6-aryl-2,3-dihydro-6a H -imidazo[1,2-a]pyrido[1,2-c][1,3,5]triazin$5(6 \mathrm{H})$-ones. Crystal and molecular structure of 6 -phenyl- $2,3-$ dihydro-6a $H$-imidazo $1,2-a]$ pyrido $[1,2-c][1,3,5]$ triazin- $5(6 H)$-one, 1033-8

## CYANOARENE

Diazotization and Sandmeyer reactions of arylamines in poly(ethylene glycol)-methylene dichloride: usefulness of PEG in synthetic reactions, 645-8
CYANOPHOSPHATE
Regiospecific arylation of 1,4-benzoquinone cyanohydrin phosphate: synthesis of 3-aryl-4-hydroxybenzonitriles, 1771-6
CYCLAZINE
peri-Substituted imidazo[1,2-a]pyridines. A new reductive elimination reaction, 1159-64
CYCLIC AMP-DEPENDENT PROTEIN KINASE
Synthesis of substrates of cyclic AMP-dependent protein kinase and use of their protected precursors for the convenient preparation of phosphoserine peptides, 529-36

## CYCLOADDITION

Photochemical cycloadditions of 1,3-dioxoles to anisole, 15-20
On the preparation and chemical reactivity of 2-benzopyrylium-4olate, 195-202
Organic heterocyclothiazenes. Part 1. The trithiadiazepine and trithiatriazepine ring systems, 203-6
Organic heterocyclothiazenes. Part 2. Reaction of tetrasulphur tetranitride with phenylacetylene and diphenylacetylene, 207-10
Base-promoted cyclisation of hydrazonoyl chlorides bearing an alkynylsulphonyl group, 399402
Ketene. Part 25. Mechanistic studies of the reaction of nitrile oxides with ketenes, 567-70
1,3-Dipolar cycloaddition reactions of nitrilium betaines with aryl thiocyanates and selenocyanates, 607-12
Intramolecular 1,3-dipolar cycloaddition of alkyl azidoalkylidenemalonate and 1,3-dipolar cycloreversion of the triazoline intermediate: synthesis and reactions of an N -sulphonyl-2,4-dihydropyrrolo[3,4-b]indole, 977-80
Thermal cycloaddition of N -arylmaleimides to phenols: the convenient synthesis of bicyclo[2.2.2]oct-2-en-5-one and
tricyclo[3.3.0.0 ${ }^{2.8}$ ] octan-2-one derivatives from phenols, 1147-52
Reactions of xanthinium $N(7)$-ylides with olefinic dipolarophiles, 1211-20
Photochemical reactions of pyridine-4-thiones and acridine-9thiones with alkenes, 1225-8
Organic heterocyclothiazenes. Part 6. Improved synthesis of trithiadiazepines from tetrasulphur tetranitride and alkynes, 1585-92
Ketene. Part 26. The reactions of 3,4-dihydroisoquinoline $N$-oxide with ketenes, and an attempted synthesis of 3,4-dihydro-3,3dimethylquinoline $N$-oxide, 1635-40
A novel stereoselective access to des- $A B$-aromatic corticosteroids via intramolecular cycloaddition reaction-potential intermediates for the synthesis of corticosteroids, 1727-34
Reaction of mesoionic thiazol-4-ones with azodicarbonyl dipolarophiles. Cleavage modes of the bi- and tri-cyclic adducts, 1979-86
Studies on chromone derivatives. Novel 1,3 dipolar cycloadditions of 4-oxo-1-benzopyran-3-carbaldehyde imines and imine oxides, 1995-8
Organic hererocyclothiazenes. Part 5. Cycloaddition reactions of tetrasulphur tetranitride with highly electron deficient alkynes, 2109-8
$\mathrm{X}=\mathrm{Y}-\mathrm{ZH}$ Systems as potential 1,3-dipoles. Part 7 . Stereochemistry of the cycloaddition of imines of $x$-amino acid esters to fumarate and maleate esters, 2275-84
$\mathrm{X}=\mathrm{Y}-\mathrm{ZH}$ Systems as potential 1,3-dipoles. Part 8. Pyrrolidines and $\Delta^{5}$-pyrrolines (3,7-diazabicyclo[3.3.0]octenes) from the reaction of imines of $x$-amino acids and their esters with cyclic dipolarophiles. Mechanism. of racemisation of $x$-amino acids and their esters in the presence of aldehydes, 2285-96
Selectivity and charge transfer in photoreactions of donor-acceptor systems. Part 10. meta Photocycloadditions of $m$ bis(trifluoromethyl)benzene and trifluoromethyl benzonitriles to olefins, 2333-8
Nitrile sulphides. Part 7. Synthesis of [1]benzopyrano-[4,3-c]isothiazoles and isothiazolo[ $[4,3-c]$ quinolines, 2339-44
A new route to chiral hydroxypyrrolidines from D-erythrose via intramolecular 1,3-cycloaddition, 2371-6
Intramolecular cycloaddition of azoalkenes derived from terminal alkenoic and alkynoic acids, 2511-6
Formation of pyridazino[6,1-c][1,4]oxazin-8(7H)-ones by intramolecular cycloaddition of azoalkenes, 2517-22
Photochemical reactions of pyrimidinethiones with alkenes, 2523 30
An unexpected double cycloaddition of [1,2,4]triazolo[1,5$a$ ]pyrimidine $N$-ylide with activated acetylenes and alkenes, 2531-8
Cycloadducts of nitrones with isocyanates; 1,2,4- or 1,3,4oxadiazolidinones?, 2593-6
Chemistry of silylated thioketones. Part 2. Cycloaddition reactions with 1,3-dienes, 2643-6
Chemistry of silyl thioketones. Part 3. Cycloaddition reactions with heterodienes ( $\alpha$-nitrosostyrene and ketene imines), 2647-52
Interaction of thiophene $\mathrm{S}, \mathrm{N}$-ylides with dimethyl
acet ylenedicarboxylate, 2659-62

## CYCLOALKANAPHTHALENE

Enhanced carbonyl reactivity and conformational effects in peridioxocycloalka[de]naphthalenes, 2437-42

## CYCLOALKENE

Photochemistry of organo-halogenic molecules. Part 20. The effect of cycloalkene structure on the $[2+2]$ photocycloaddition to hexafluorobenzene, 981-6

## CYCLOBUTANE

Synthesis of 16 -substituted 17 -nor-13x-steroids and skeletal rearrangement of 17-nor- $5 x, 13 x$-androstane-16x-carbonyl $m$ chlorobenzoyl peroxide, 1247-54
CYCLOHEPTATRIENE
Addition of arylsulphonylcarbenes to benzene, 715-6
CYCLOHEXENE
The chemistry of aryl-lead(rv) tricarboxylates. Reaction with vinylogous $\beta$-keto esters, 2689-94
CYCLOHEXENOL
Preparation of some allylic sulphones; base-catalysed isomerisation and deuteriation of cyclohex-2-enyl $p$-tolyl sulphones, 2701-6
CYCLOHEXENONE
2-Bromo-3-methoxycyclohex-2-enone, a new reagent for the $\alpha$ arylation of lactams, 2153-6

## CYCLO-OCTACARBAZOLE

Cyclo-octa[def]carbazole, a new heterocyclic paratropic ring system, 403-12
CYCLO-OCTAPYRROLE
Synthesis of [6](2,4)pyridinophanes, 2829-32
CYCLOPENTADIENONE
Reaction of di-t-butoxyethyne with $\mathrm{Fe}_{2}(\mathrm{CO})_{9}: X$-ray crystal structure of (tetra-t-butoxycyclopentadienone)tricarbonyliron(0) and an improved formal synthesis of hydrocroconic acid and the croconate dianion, 2749-52
CYCLOPENTANE
Ruthenium(II)- and rhenium(III)-catalysed addition of tetrahalogenomethanes to alkenes and $1, \omega$-dienes. Stereoselective formation of $c i s$-1,2-disubstituted cyclopentanes from 1,6-dienes, 1515-20
CYCLOPENTAPYRROLE
The synthesis of heteroaromatic prostacyclin analogues via keto alkyne cyclisation, 1825-32
CYCLOPENTATHIOPHENE
The synthesis of heteroaromatic prostacyclin analogues via keto alkyne cyclisation, 1825-32
CYCLOPENTENONE
Chlorous acid oxidation of trifluoromethylphenols: cyclopentenolones by benzilic acid ring contraction, 1861-4
CYCLOPENTINDOLE
The Fischer indolisation of cyclopropyl phenyl ketone and cyclobutyl phenyl ketone phenylhydrazones, 2265-8
CYCLOPHANE
Synthesis and properties of methano bridged tetradehydro[18]annulene, -[20]annulene, -[22] annulene, -[24]annulene, and the related $[1,3]$ cyclophanpolyenediyne compounds, 831-44

## CYCLOPROPACHOLESTANE

The synthesis of some cholesterol derivatives as probes for mechanisms of cholesterol metabolism, 595-600
CYCLOPROPANE STEROL
Synthesis and stereochemistry of 23,24-dihydrocalysterol: implications for marine sterols of a unified biosynthetic scheme involving protonated cyclopropanes, 1283-90
Sterols in marine invertebrates. Part 57. Stereostructure, synthesis, and acid-catalysed isomerization of hebesterol-a biosynthetically significant cyclopropyl-containing marine sterol, 1307-18

## CYCLOPROPENE

Regioselective ring-opening and dimerisation of methyl 3,3dimethylcyclopropenecarboxylate, 1609-12
Regioselective Ring-opening and demerization of methyl 3,3dimethylcyclopropenecarboxylate, 2109-10
CYCLOPROPENONE
$N, O$-Heterocycles. Part 18. Regiochemistry and site selectivity of $N$ alkylhydroxylamine addition to 2,3-diphenylcyclopropenone, 961-6
CYCLOSTEROID
Formation of cyclized, including 3,5-cyclosteroid, alkenes from $\beta, \gamma$ unsaturated Grignard reagents induced by elimination of a $\delta$ alkoxy group, 475-80
CYSTEAMINE
Studies on amino acid derivatives. Part 7. General method for the synthesis of penam and cepham and their substituted derivatives., 1845-52
DEAMINATION
Usefulness of poly(ethylene glycol) in synthetic reactions. Part 10. Deamination of arylamines via dediazoniation by tinhydrochloric acid in poly(ethylene glycol)-methylene dichloride, 1951-4
DEBROMINATION
peri-Substituted imidazo[1,2-a]pyridines. A new reductive elimination reaction, 1159-64
DECARBOXYLATIVE ELIMINATION
A regiocontrolled synthesis of allylstannanes, 2259-64

## DECITOL

Higher-carbon sugars. Part 8. The synthesis of some decitols via the epoxidation of unsaturated precursors, 2421-6

## DEDIAZONIATION

Usefulness of poly(ethylene glycol) in synthetic reactions. Part 10 Deamination of arylamines via dediazoniation by tin-hydrochloric acid in poly(ethylene glycol)-methylene dichloride, 1951-4
DE-ETHYLISOCOPROPORPHYRIN
Synthetic and biosynthetic studies of porphyrins. Part 9. Synthesis of isocoproporphyrin, dehydroisocoproporphyrin, and deethylisocoproporphyrin, 287-98

## DEHALOGENATION

Hard acid and soft nucleophile systems. Part 11. Hard-soft affinity inversion: dehalogenation of $\alpha$-halogeno ketones with aluminium chloride and a thiol, 1043-8
DEHYDROISOCOPROPORPHYRIN
Synthetic and biosynthetic studies of porphyrins. Part 9. Synthesis of isocoproporphyrin, dehydroisocoproporphyrin, and deethylisocoproporphyrin, 287-98

## DEHYDROTECTOL

A revised structure for dehydrotectol and tecomaquinone I, 1821-4 DENITRATION
peri-Substituted imidazo[1,2-a]pyridines. A new reductive elimination reaction, 1159-64
DENITROHYDROGENATION
Regioselective Diels-Alder reactions. The nitro group as a regiochemical control element, 1929-36

## DEOXYURIDINE

Synthesis of 5-(1-substituted ethyl)uracil derivatives and some of their chemical and biological properties, 457-64
Some chemical reactions of 5 -vinyluracil and $2^{\prime}$-deoxy-5vinyluridine, 1325-30
Reaction of 5-trifluoromethyl-2'-deoxyuridine and 1-methyl-5trifluoromethyluracil with methoxyamine: model studies for the interaction between thymidylate synthetase and 5-trifluoromethyl-2'-deoxyuridine 5'-phosphate, 2141-8
DEOXYVULGARIN
Microbial transformations of sesquiterpenoids: conversion of deoxyvulgarin by Rhizopus nigricans and Aspergillus ochraceous, 471-4
DEPSIPEPTIDE
Synthesis of sequential polydepsipeptides involving depsipeptide formation by the 2 -nitrophenylsulphenyl $N$-carboxy $\alpha$-amino acid anhydride ( $\mathrm{Nps}-\mathrm{NCA}$ ) method, 2249-52
DESERTORIN
Studies on fungal products. Part 10. Isolation and structures of novel bicoumarins, desertorins A, B, and C, from Emericella desertorum, 1735-8
DESMOLASE
The synthesis of 3-(4-aminotetrafluorophenyl)-3-ethylpiperidine-2,6dione; a fluorinated derivative of aminoglutethimide, 2129-36
DESMYCOSIN ALDOL
Novel semisynthetic oxo and alkyl macrolide antibacterials and related derivatives, 1189-210
DEUTERIATION
A new flexible synthesis of ( $R, S$ )-mevalonolactone, 2301-4
Preparation of some allylic sulphones; base-catalysed isomerisation and deuteriation of cyclohex-2-enyl p-tolyl sulphones, 2701-6
DIACETOXYIODOBENZENE
Intramolecular functionalization of $N$-cyanamide radicals: synthesis of 1,4 -and $1,5-N$-cyanoepimino compounds, $937-44$
DIAMINOMALEONITRILE
The chemistry of nitrilium salts. Part 4. Some reactions of 5-amino-4-( $C$-cyan oformimidoyl)imidazoles obtained from nitrilium trifluoromethanesulphonate salts and diaminomaleonitrile, 1521-6
DIASTEREOSELECTIVITY
Asymmetric synthesis of optically active threo- and erythropyrrolidinylbenzyl alcohol by the highly stereospecific arylation of ( $S$ )-proline and the subsequent highly diastereoselective reduction of the $\alpha$-amino ketone, 1465-72
DIAZABICYCLO-OCTENE
$\mathrm{X}=\mathrm{Y}-\mathrm{Z} H$ Systems as potential 1,3-dipoles. Part 8. Pyrrolidines and $\Delta^{5}$-pyrrolines (3,7-diazabicyclo [3.3.0]octenes) from the reaction of imines of $\alpha$-amino acids and their esters with cyclic dipolarophiles. Mechanism of racemisation of $x$-amino acids and their esters in the presence of aldehydes, 2285-96
DIAZAPHENOXASELENINE
Novel heterocyclic systems. Part 28. Preparation and characterization of the 1,6-, 1,7-, 1,8- and 1,9-diazaphenoxaselenines: an unexpected divergence between closely related sulphur and selenium systems, 283944
DIAZAPHOSPHOCINE
Phosphorus-nitrogen compounds. Part 49. The synthesis and mechanism of formation of 6-chloro-5,6,7,12-tetrahydro-2,5,7,10-tetramethyldibenzo[d,g][1,3,2]-diazaphosphocine 6-oxide and 6sulphide, 1547-52
DIAZETIDINONE
Synthesis of 1,2-diazetidinones (aza- $\beta$-lactams) by photochemical ring contraction, 877-84

## DIAZETIDINONE (contd)

Regioselectivity in the photochemical ring contraction of 4-
diazopyrazolidine-3,5-diones to give aza- $\beta$-lactams, 885-98
Rhodium carbenoid mediated cyclisations. Synthesis of 1,2diazetidinones (aza- $\beta$-lactams), 899-902

## DIAZONIUM COMPOUND

Diazotization and Sandmeyer reactions of arylamines in poly(ethylene glycol)-methylene dichloride: usefulness of PEG in synthetic reactions, 645-8
DIAZONIUM COUPLING
Electrophilic substitution in indoles. Part 15. The reaction between methylenedi-indoles and $p$-nitrobenzenediazonium fluoroborate, 2543-52
DIAZONIUM SALT
Reaction of diazonium salts with transition metals. Part 13. Palladium-catalyzed carbonylative coupling of arenediazonium salts with organotin reagents to give aromatic ketones, 15114
DIAZONIUM SYNTHON
3-Aryl-1-tetrazol-5-yltriazenes, bench-stable arenediazonium ion synthons: synthesis of biaryls and aryl halides, 103942
DIBENZODIAZAPHOSPHOCINE
Phosphorus-nitrogen compounds. Part 49. The synthesis and mechanism of formation of 6-chloro-5,6,7,12-tetrahydro-2,5,7,10-tetramethyldibenzo[d,g][1,3,2]-diazaphosphocine 6-oxide and 6sulphide, 1547-52
DIBENZODIAZEPINOISOINDOLYLIDENE
$X$-Ray structural studies of stereoisomeric bi $(14 \mathrm{H}-$ dibenzo[4,5:6,7][1,3]diazepino[2,1-a]isoindol-14-ylidene)s obtained from the reaction of $2,2^{\prime}$-diaminobiphenyl with $o$ phthalaldehyde, 1763-70
DIBENZOFURAN
Naturally occurring dibenzofurans. Part 9. A convenient synthesis of phthalides: the synthesis of methyl di- $O$-methylporphyrilate, 231-6
DIBENZOPHOSPHOLE
Synthesis of substituted dibenzophospholes. Part 5. Synthesis of intermediates for 4 - and 6 -aryl substituents, $851-8$
Synthesis of substituted dibenzophospholes. Part 6. Preparation of symmetrical and non-symmetrical quaterphenyl intermediates, 859-66
Synthesis of substituted dibenzophospholes. Part 7. Regiospecific synthesis of 4,6-diaryl-3,7-dioxydibenzophospholes from 2,2'4,4'tetranitrobiphenyl, 867-70
Synthesis of substituted dibenzophospholes. Part 8. Synthesis and resolution of atropisomers of a 4,6-diaryldibenzophosphole, 871-6
DIBENZOPYRANONE
The structure and synthesis of the novel orchid pigments dengibsin and dengibsinin, 2553-64
DIBENZOQUINOLIZINE
Syntheses of condensed polycyclic azonia aromatic compounds by photocyclization, 481-8
DICHLOROMETHYLENATION
Dichloromethylenation of sugar $\gamma$-lactones: a stereospecific synthesis of $\mathrm{L}-(+)$-muscarine and $\mathrm{L}-(+)$-epimuscarine toluene- $p$ sulphonates, 661-4
DIELS-ALDER
Stereochemical studies. Part 103. Saturated heterocycles Part 107. Preparation of 3 -mono- and 2,3 -di-substituted pyrimidin-4(3H)ones in retro-Diels-Alder reactions. The correct 1,2 -disubstituted structure of the compounds previously described as 2,3disubstituted derivatives, 237-40
Cyclo-octa[def]carbazole, a new heterocyclic paratropic ring system, 403-12
Regioselective Diels-Alder reactions. The nitro group as a regiochemical control element, 1929-36
DIELS-ALDER DIMERISATION
Ring closure of ortho-blocked 4-aryl-1,2,4-triaza-1,3-dienes via 1,6electrocyclisation followed by Diels-Alder dimerisation, 1533-6
DIELS-ALDER REACTION
Stereoselective total synthesis of ( $\pm$ )-3-oxosilphinene through intramolecular Diels-Alder reaction, 1331-8
Chemistry of silylated thioketones. Part 2. Cycloaddition reactions with 1,3-dienes, 2643-6
DIENE
Ruthenium(II)- and rhenium(iII)-catalysed addition of tetrahalogenomethanes to alkenes and $1, \omega$-dienes. Stereoselective formation of cis-1,2-disubstituted cyclopentanes from 1,6-dienes, 1515-20

Synthesis of allyl and dienyl sulphones ria iodosulphonylation of conjugated dienes, 2605-10
Conformation dependent photochemistry of dienes. Substituent effects on the photochemical reactions of some 4-acyloxy-2-azabuta-1,3-dienes, 2663-6
Preparation of 1-nitro-1,3-dienes via nitrotrifluoroacetoxylation of 1,3-dienes, $2737-42$
DIENE SYNTHESIS
Synthesis of substituted dibenzophospholes. Part 5. Synthesis of intermediates for 4 - and 6 -aryl substituents, 851-8
Tandem Wittig reactions of 1,1 -diphenylphosphorinanium salt, 1537-40
DIENIC ALCOHOL
Ring opening of 2 H -pyrans promoted by organometallic reagents. Synthesis of dienic alcohols, 2125-8
DIENOLATE
Chiral dienolates: formation and stereoselective $\alpha$-alkylation of the lithium dienolate derived from $(Z)-\left[\left(\eta^{5}-\right.\right.$ $\left.\left.\mathrm{C}_{5} \mathrm{H}_{5}\right) \mathrm{Fe}(\mathrm{CO})\left(\mathrm{PPh}_{3}\right) \mathrm{COCH}=\mathrm{CHMe}\right] . \bar{X}$-Ray crystal structure of $(R S)-(Z)-\left[\left(\eta^{5}-\mathrm{C}_{5} \mathrm{H}_{5}\right) \mathrm{Fe}(\mathrm{CO})\left(\mathrm{PPh}_{3}\right) \mathrm{COCH}=\mathrm{CHMe}\right]$, 489-94
DIENONE-PHENOL REARRANGEMENT
Dienone-phenol rearrangement of naphthalenetriones. A route to 10 -acetoxy-5,6,7,8-tet rahydrophenanthrene-1,4-diones, 2855
DIENYL SULPHONE
Synthesis of allyl and dienyl sulphones via iodosulphonylation of conjugated dienes, 2605-10
DIGITALIS RECEPTOR
Synthesis of ring-A and -b substituted $17 x$-acetox ypregnan-20-one derivatives with potential activity on the digitalis receptor in cardiac muscle, 1361-8
DIHYDROFOLATE REDUCTASE
Structural studies on bio-active compounds. Part 5. Synthesis and properties of 2,4 -diaminopyrimidine dihydrofolate reductase inhibitors bearing lipophilic azido groups, 2217-28
DIHYDROISOQUINOLINE $\boldsymbol{N}$-OXIDE
Ketene. Part 26. The reactions of 3,4-dihydroisoquinoline $N$-oxide with ketenes, and an attempted synthesis of 3,4-dihydro-3,3dimethylquinoline $N$-oxide, $1635-40$

## DIKETONE

Enhanced carbonyl reactivity and conformational effects in peridioxocycloalka[de]naphthalenes, 2437-42
DILITHIOPHENYLETHYNE
The synthesis of aromatic leukotriene analogues; regioselective trapping of 2,4'-dilithiophenylethyne, 1573-8
DIMETHYL SULPHOXIDE
Reactions of polyfluoro-arenols and -heteroarenols with activated dimethyl sulphoxide. Facile [2,3]-sigmatropic rearrangement reactions giving de-aromatised products, 2091-8

## DIOXASPIROUNDECANE

Isolation and synthesis of 1,7-dioxaspiro[5.5]undecane and 1,7-dioxaspiro[5.5]undecan-3- and -4-ols from the olive fly (Dacus oleae), 1123-8
A directed aldol approach to ( + )-milbemycin $\beta_{3}, 2171-82$
The 3,4-dihydro-2H-pyran approach to $(+)$-milbemycin $\beta_{3}$. Part 1 . An alternative synthesis of ( $2 S, 4 S, 6 R, 8 R, 9 S$ )-2-formylmethyl-4-(dimethyl-t-butylsilyloxy)-8,9-dimethyl-1,7dioxaspiro[5.5]undecane, 2183-8
The 3,4 -dihydro- 2 H -pyran approach to $(+)$-milbemycin $\beta_{3}$. Part 2. An improved synthesis of $(2 R, 4 S, 6 S, 8 R, 9 S)-2-[(5 R)-(2 E)-3-$ methyl-5-formyl-hex-2-en-1-yl]-8,9-dimethyl-4-(dimethyl-t-butylsilyloxy)-1,7-dioxaspiro[5,5]undecane, 2189-94

## DIOXOLANE

Photosensitised oxidation of model unsaturated lipid systems: ( $4 Z, 7 Z$ )-undeca-4,7-diene and (4Z)-undec-4-en-7-yne, 1999-2008
DIOXOLE
Photochemical cycloadditions of 1,3-dioxoles to anisole, 15-20
DIPTERA
Isolation and synthesis of 1,7-dioxaspiro[5.5] undecane and 1,7-dioxaspiro[5.5]undecan-3- and -4-ols from the olive fly (Dacus oleae), 1123-8
DIPYRIDOPYRIMIDONE
Saturated heterocycles. Part 88. Synthesis of a new ring system: dipyrido $[1,2-a: 4,3-d]$ pyrimidin-11-one derivatives, 909-12
DISILOXANE
Studies on conformationally restricted, disiloxane bridged analogues of the enkephalins, 1107-16
DISPLACEMENT REACTION
5-Thiopyranoses. Part 12. Sulphur participation in displacement

DISPLACEMENT REACTION (contd)
reactions of sulphonate esters of 5-thio-D-allose, 5-thio-D-altrose, and 5-thio-D-glucose derivatives, 2061-8
DITERPENE
Stereochemistry of the tetrahydroisopimaric acids: $X$-ray structure of methyl $8 x$-isopimaran-18-oate, 1975-8
Neighbouring group participation in the reduction of the diterpenoid fujenal, 1987-90
Structural elucidation of new diterpenoids isolated from Rabdosia umbrosa var. leucantha f. Kameba, 2403-10

## DITHIADIAZINE

Organic heterocyclothiazenes. Part 2. Reaction of tetrasulphur tetranitride with phenylacetylene and diphenylacetylene, 20710

## DITHIANE

Production of $(R)$-1-(1,3-dithian-2-yl)propan-2-ol by microbial reduction, 1607-8
DITHIINOPYRAZOLE
Polarised ketene dithioacetals. Part 50. Reactions of $\alpha$-aroyl- $\alpha$ bromoketene dithioacetals with hydrazine hydrate: formation of rearranged pyrazoles, 1945-50
DITHIOACETAL
Polarised ketene dithioacetals. Part 50. Reactions of $\alpha$-aroyl- $x-$ bromoketene dithioacetals with hydrazine hydrate: formation of rearranged pyrazoles, 1945-50
DITHIOCARBAMATE
Dialkylcarbamoyl(diaryl)iodanes, 2759-64
DITHIOCYANATION
Stereoselective bifunctionalization of alkynes by means of the mercury(II) salt-iodine combination, 1017-20
DITHIOSILVATIN
Studies on fungal products. Part 13. Isolation and structures of dithiosilvatin and silvathione, novel dioxopiperazine derivatives from Aspergillus silvaticus, 2099-102
DOPA-CONTAINING POLYPEPTIDE
Synthesis and adhesive studies of marine polypeptides, 613-8
DRIMANE SESQUITERPENE
Synthesis and resolution of albicanic acid. Simple access to optically active drimane sesquiterpenes, $987-92$
DRIMENIN
Synthesis and resolution of albicanic acid. Simple access to optically active drimane sesquiterpenes, 987-92

## DYESTUFF

Dichroic dyestuffs. A synthesis of dialkyl-8-amino-1,4,5-trihydroxyand $1,4,5,8$-tetrahydroxy-an thraquinones., 445-8

## ELASTASE

Inhibitors of human leucocyte elastase. Peptides incorporating an $x$-azanorvaline residue or a thiomethylene linkage in place of a peptide bond, 111-20
ELDANOLIDE
Resolution of 7,7-dimethylbicyclo[3.2.0]hept-2-en-6-one using Mortierella ramanniana and $3 x, 20 \beta$-hydroxy-steroid dehydrogenase, photochemistry of 3-hydroxy-7,7-dimethylbicyclo[3.2.0]heptan-6-ones, and the synthesis of $(+)$ eldanolide, 903-8
ELECTRICAL CONDUCTIVITY
Di-heteroarylethylenes: synthesis and donor properties, 2631-6
ELECTROCHEMICAL PROPERTY
Synthesis and electrochemical properties of some metallated and peripherally substituted porphyrin co-facial dimers, 2395402

## ELECTROCYCLIC REACTION

Application of a tandem electrocyclic [3,3]sigmatropic reaction of $o$-quinodimethane to the synthesis of Calabar bean alkaloids. Part 2. First total synthesis of ( $\pm$ )-geneserine, 2491-6
ELECTROCYCLIC RING CLOSURE
An approach to the construction of aromatic steroids using electrocyclic ring closure, 225-30
ELECTROCYCLISATION
Ring closure of ortho-blocked 4-aryl-1,2,4-triaza-1,3-dienes via 1,6electrocyclisation followed by Diels-Alder dimerisation, 1533-6
ELECTRON TRANSFER
Reactions of carboxylic acid derivatives with superoxide, 945-8
ELECTROPHILIC ADDITION
Electrophilic addition of benzeneselenenyl chloride to alkenes bearing an electron-withdrawing substituent, 1059-62
Participation of ambident neighbouring groups in hypobromous acid addition to some steroidal olefins. Competition of electronic and stereoelectronic effects, 1969-74

## ELECTROPHILIC SUBSTITUTION

Organic heterocyclothiazenes. Part 4. Chemistry of $1,3,5,2,4$ trithiadiazepines, 217-24
Reactivity of 1,2 -benzisoxazole 2 oxides, 695-8
Electrophilic substitution in (arene)tricarbonylchromium complexes. Part 1., 747-52
Electrophilic substitution in indoles. Part 15. The reaction between methylenedi-indoles and $p$-nitrobenzenediazonium fluoroborate, 2543-52

## ELIMINATION-ADDITION

Influence of ortho methyl and isopropyl substituents on the reactivity of $N$-t-butyl $P$-arylphosphonamidic chlorides with isopropylamine and t-butylamine: steric acceleration of metaphosphonimidate formation by an elimination-addition mechanism; contrasting behaviour of $N, N$-dimethyl $P$ arylphosphonamidic chlorides, 1399-406
EMERICELLA DESERTORUM
Studies on fungal products. Part 10. Isolation and structures of novel bicoumarins, desertorins A, B, and C, from Emericella desertorum, 1735-8
ENAMIDE
Synthesis of $8,9,10,11,12,13,13 a, 14$-octahydro- 7,$11 ; 9,13$ dimethanoazonino $[1,2-b]$ isoquinolin- $5(7 H)$-ones and some related derivatives by photocyclization reactions of 5-methylene-4-aroyl- and -acryloyl-4-azatricyclo[4.3.1.1 ${ }^{3,8}$ ] undecanes (4azahomoadamantanes), 1171-6
ENAMINE
Synthesis of heterocycles via enamines. Part 12. Intramolecular additions of nucleophiles to 1,4-dihydropyrimidine-2( 3 H$)$-thione derivatives: single-step synthesis of condensed heterocyclic compounds, 261-4
Ketene $S, N$-acetals as synthetic intermediates for heterocycles. Reaction of ketene $S, N$-acetals with 1,4 -quinones, $1501-4$
A three-step procedure for the conversion of $\gamma$-lactones into $\delta$ lactones, 2469-72
ENAMINE ESTER
Synthesis of pyrrolo[2,1-c][1,4]benzothiazines by annellation of 3-alkoxycarbonylmethylene-4H-1,4-benzothiazines ( $\beta$-enamine esters) with dimethyl acetylenedicarboxylate, 1027-32
ENANTIOSELECTIVE REDUCTION
Production of $(R)$-1-(1,3-dithian-2-yl)propan-2-ol by microbial reduction, 1607-8
ENANTIOSELECTIVE SYNTHESIS
1,2-Asymmetric induction in intramolecular Michael reaction. A novel and enantioselective route to $(+)$-Geissman lactone, 9931004
ENANTIOSPECIFIC SYNTHESIS
Enantiospecific synthesis of $(+)$-retronecine, $(+)$-crotonecine, and related alkaloids, 2377-84
ENANTIOTOPIC GROUP DIFFERENTIATION
Enantiotopic-group differentiation. Catalytic asymmetric ringopening of prochiral cyclic acid anhydrides with methanol, using cinchona alkaloids, 1053-8
ENE REACTION
Reaction of [arylthio(chloro)methyl]trimethylsilanes with arenes and alk-1-enes in the presence of Lewis acid: syntheses of [aryl(arylthio)methyl]- and (1-arylthioalk-3-enyl)trimethylsilanes, 589-94
Vinyl azides in heterocyclic synthesis. Part 5. Thermal and photochemical decomposition of azidocinnamates containing ortho-cycloalkylidene substituents, 913-20
Carbon-carbon bond forming reactions via $\alpha$-phosphoryl- $\alpha$-thio carbocations, 1095-8
ENKEPHALIN
Studies on conformationally restricted, disiloxane bridged analogues of the enkephalins, 1107-16
ENZYME
Enzyme-mediated $\mathrm{H}_{2} \mathrm{O}_{2}$ oxidation of ( $E$ )-stilbene-3,4-diol, 2719-22
ENZYME INHIBITOR
Reaction of 5-trifluoromethyl-2'-deoxyuridine and 1-methyl-5trifluoromethyluracil with methoxyamine: model studies for the interaction between thymidylate synthetase and 5-trifluoromethyl-2'-deoxyuridine $5^{\prime}$-phosphate, 2141-8
ENZYME MODEL
The shikimate pathway. Part 7. Chorismate mutase: towards an enzyme model, 2765-74
ENZYMIC OXIDATION
Metabolism of $2^{\prime}, 4,4^{\prime}$-trihydroxychalcone in Amorpha fruticosa seedlings; structure and role of chalaurenol, a novel heterocyclic

## ENZYMIC OXIDATION (contd)

enol ether formed by enzymic oxidation, 2775-82
ENZYMIC REDUCTION
Resolution of 7,7-dimethylbicyclo[3.2.0]hept-2-en-6-one using
Mortierella ramanniana and $3 x, 20 \beta$-hydroxy-steroid
dehydrogenase, photochemistry of 3-hydroxy-7,7-
dimethylbicyclo [3.2.0]heptan-6-ones, and the synthesis of ( + )eldanolide, 903-8

## EPILUPININE

Stereocontrolled construction of octahydroquinolizines, octahydroindolizines, hexahydrobenzo[a]quinolizines, and an octahydroindolo [2,3-a]quinolizine by an intromolecular double Michael reaction: synthesis of $( \pm)$-epilupinine, 1719-26

## EPIMUSCARINE

Dichloromethylenation of sugar $\gamma$-lactones: a stereospecific synthesis of $\mathrm{L}-(+)$-muscarine and $\mathrm{L}-(+)$-epimuscarine toluene- $p$ sulphonates, 661-4

## EPISELENONIUM ION

Electrophilic addition of benzeneselenenyl chloride to alkenes bearing an electron-withdrawing substituent, 1059-62
EPOXIDATION
Formation of glycosides by epoxidation-ring closure of open-chain hydroxyenol ethers obtained from sugars, 1319-24
Higher-carbon sugars. Part 8. The synthesis of some decitols via the epoxidation of unsaturated precursors, 2421-6
EPOXIDE
Reactions of tris(2,6-dimethoxyphenyl)phosphine with epoxides, 151-4
Synthetic routes to the piperolides, fadyenolides, epoxypiperolides, and related compounds, 717-42
EPOXIDE CLEAVAGE
Steroids Part 22. Photochemistry of 5,6-epoxy-4,4-dimethylcholestan-3-ones and 5,6-epoxy-17-hydroxy-4,4-dimethylestran-3-ones, 2653-8
EPOXIDE REARRANGEMENT
14-Methyl steroids. Part 4. Synthesis of $14 \beta$-methylestradiol and related $14 \beta$-methyl-19-norsteroids, 37-44
EPOXYCYCLOHEXANE
The reaction of sodium 1,3-diphenyl-2-azapropenide with 1,2epoxycyclohexane, 515-8
EPOXY KETONE
Steroids Part 22. Photochemistry of 5,6-epoxy-4,4-
dimethylcholestan-3-ones and 5,6-epoxy-17-hydroxy-4,4-dimethylestran-3-ones, 2653-8

## EPOXY NITRILE

Photochemical reactions of nitrile compounds. Part 2. Photochemistry of an $\alpha, \beta$-unsaturated $\gamma, \delta$-cyclopropyl nitrile, 1937-44

## ERGOT

The synthesis of 9,10-dimethyl-4,6,6a,7,8,9,10,10aoctahydroindolo $[3,4-\mathrm{gh}]$-isoquinoline, the 8,9 -dimethyl- 8 -aza analogue of ergoline, 707-12
ERYTHROSE
A new route to chiral hydroxypyrrolidines from D-erythrose via intramolecular 1,3-cycloaddition, 2371-6
ESTRATRIENE
14-Methyl steroids. Part 4. Synthesis of $14 \beta$-methylestradiol and related $14 \beta$-methyl-19-norsteroids, 37-44
ETHANONAPHTHALENE
Synthesis of substituted dibenzophospholes. Part 5. Synthesis of intermediates for 4 - and 6 -aryl substituents, 851-8

## ETHENOANTHRACENE

The synthesis of diethyl $p$-tolylsulphonylethynylphosphonate and related acetylenes, and their reactions with nucleophiles, pyridinium-1-dicyanomethylides, and dienes, 1275-82

## ETHYLATION

Trifluoromethanesulphonic acid as a catalyst for the ethylation of benzene, 2049-56
ETHYLBENZENE
Trifluoromethanesulphonic acid as a catalyst for the ethylation of benzene, 2049-56
EUDESMANOLIDE
Synthesis of some tetrahydrosantonin derivatives with
functionalised angular substituents based on remote oxidation, 1793-8
EURYFURAN
Reaction of ( $1 S, 6 S$ )-1,7,7-trimethyl-2,3-dimethylene-transbicyclo[4.4.0]decane with thallium(III) acetate; a new route to $(-)$-warburganal and $(+)$-euryfuran, 2137-40

## EXCIPLEX

Photochemical cycloadditions of 1,3-dioxoles to anisole, 15-20
FADYENOLIDE
Synthetic routes to the piperolides, fadyenolides, epoxypiperolides, and related compounds, 717-42
FAGARONINE
Studies on the chemical constituents of Rutaceous plants. Part 62. Efficient synthesis of fagaronine, a phenolic benzo[ $c]$ phenanthridine alkaloid with antileukaemic activity, 671-6
FARNESOL BIOSYNTHESIS
Facile and stereospecific synthesis of (S)- and ( $R$ )-[2- $\left.{ }^{2} \mathrm{H}\right]$ isopentenyl pyrophosphates, 2845-8
FARNESYL PYROPHOSPHATE
In vitro production and biosynthesis of fomajorin D and S by Fomes annosus (Fr.) Cooke, 1869-72

## FENICULIN

Applications of the stereochemically-controlled Horner-Wittig reaction: synthesis of feniculin, $(E)$-non- 6 -en-1-ol, a pheromone of the mediterranean fruit fly, $(E)$ - and ( $Z$ )-dec-5-en-1-ol, trisubstituted alkenes, and ( $Z$ )-x-bisabolene, 2569-78

## FICISTEROL

Synthesis and stereochemistry of ficisterol and norficisterol: biosynthetic implications, 1291-306
FISCHER INDOLISATION
The Fischer indolisation of cyclopropyl phenyl ketone and cyclobutyl phenyl ketone phenylhydrazones, 2265-8

## FISETIN

Flavonoids of Tephrosia procumbens-revised structure for praecansone A and conformation of praecansone B, 2723-8
FLASH VACUUM PYROLYSIS
Gas phase rearrangement reactions of 2-(arylamino)phenylaminyl radicals, 1407-12
FLAVAN
Condensed tannins. Base-catalysed reactions of polymeric procyanidins with phloroglucinol: intramolecular rearrangements, 1875-82
FLAVIN
Hydrolysis products of flavins (isoalloxazines), 75-84
FLAVONOID
Flavonoids of Tephrosia procumbens-revised structure for praecansone A and conformation of praecansone B, 2723-8
Medicinal plants of southern Africa. Part 1. Dimeric chalconebased pigments from Brackenridgea zanguebarica, 280914

## FLUORENE

Acid-catalysed intramolecular $C$-alkylation in $\beta, \gamma$-unsaturated diazomethyl ketones. Part 5. Synthesis of functionalised hydrofluorene derivatives via novel fragmentation reactions, 1263-8
FLUORENOL
The structure and synthesis of the novel orchid pigments dengibsin and dengibsinin, 2553-64
FLUORINATED HETEROCYCLE
Polyhalogenoheterocyclic compounds. Part 38. Reactions of fluorinated-alkenes and -cycloalkenes with difunctional nucleophiles, 763-8
FLUOROARENOL
Reactions of polyfluoro-arenols and -heteroarenols with activated dimethyl sulphoxide. Facile [2,3]-sigmatropic rearrangement reactions giving de-aromatised products, 2091-8

## FLUOROBENZENE

Photochemistry of organo-halogenic molecules. Part 20. The effect of cycloalkene structure on the $[2+2]$ photocycloaddition to hexafluorobenzene, 981-6

## FLUORO ETHER

The selective protection of the 3-ketone functions of steroids as heptafluoro-p-tolyl enol ethers, 1129-34
FLUOROMETHANETHIOLATE ION
Trifluoromethanethiolate ion. Part 2. Nucleophilic substitution in pentafluoropyridine. Synthesis and characteristics of trifluoromethylthio and trifluoromethylsulphonyl derivatives, 2119-24

## FLUOROPHOSPHONATE

Studies on selected transformations of some fluoromethanephosphonate esters, 181-6

## FLUORO STEROID

The synthesis of some cholesterol derivatives as probes for mechanisms of cholesterol metabolism, 595-600

## FOMAJORIN

In vitro production and biosynthesis of fomajorin D and S by Fomes annosus (Fr.) Cooke, 1869-72

## FOMES ANNOSUS

In vitro production and biosynthesis of fomajorin D and S by Fomes annosus (Fr.) Cooke, 1869-72
FORCE-FIELD CALCULATION
Enhanced carbonyl reactivity and conformational effects in peridioxocycloalka[de]naphthalenes, 2437-42

## FORMAMIDE

Lithium aluminium hydride reduction of chiral benzoylformamides derived from chiral amino alcohols, 1495-500
FRAGMENTATION-RECOMBINATION
Biosynthesis of porphyrins and related macrocycles. Part 29. Synthesis and chemistry of 2,2-disubstituted $2 H$-pyrroles (pyrrolenines), 2027-48
FRIEDEL-CRAFTS
Reaction of [arylthio(chloro)methyl]trimethylsilanes with arenes and alk-1-enes in the presence of Lewis acid: syntheses of [aryl(arylthio)methyl]- and (1-arylthioalk-3-enyl)-
trimethylsilanes, 589-94
Electrophilic substitution in (arene)tricarbonylchromium complexes. Part 1., 747-52
FRIEDEL-CRAFTS REACTION
Carbon-carbon bond forming reactions via $x$-phosphoryl- $x$-thio carbocations, 1095-8
FRONTIER ORBITAL CONTROL
Use of the diazoalkane-thione reaction in the synthesis of a vinyltrimethylenemethane precursor, 2497-504
FUJENAL
Neighbouring group participation in the reduction of the diterpenoid fujenal, 1987-90
FULVENE
Syntheses and properties of dicyanodimethyltetradehydro-trideca-, -pentadeca-, -heptadeca-, and -nonadeca-annulenes, and benzannelated tridecafulvene derivatives, 1505-10
FULVIC ACID
Studies on the syntheses of heterocyclic compounds containing benzopyrone. Part 5. Total synthesis of fulvic acid, 38994
FUNGAL METABOLITE
Metabolites of Aspergillus ustus. Part 4. Stable-isotope labelling studies on the biosynthesis of the austalides, 2253-8
FURAN
Synthesis of enantiomerically pure 2,5 -disubstituted
tetrahydrofurans using readily prepared ( $2 S$ )-1-
phenylsulphonylalkan-2-ols, 1799-804
Photosensitized oxidation of furans. Part 12. Solvent effects in thermal rearrangement of the 2,5 -peroxides of 2,5 -unsubstituted furans, 1833-40
FURO-OXAZINE
Formation of 2-acetylpyridines by the base-catalysed ring opening of dihydro- 4 H -furo[2,3-e]oxazines, 2505-10

## GAS PHASE

Continuous conversion of alcohols into alkyl halides by gas-liquid phase-transfer catalysis (G.L.-P.T.C.), 2157-8
Alkylation reactions of ethyl malonate, ethyl acetoacetate, and acetylacetone by gas-liquid phase-transfer catalysis (G.L.-P.T.C.), 2159-62
GAS-PHASE REACTION
Gas-liquid phase-transfer catalysis: Wittig-Horner reaction in heterogeneous conditions, 713-4

## GEISSMAN LACTONE

1,2-Asymmetric induction in intramolecular Michael reaction. A novel and enantioselective route to $(+)$-Geissman lactone, 9931004
GEISSMAN-WAISS LACTONE
Enantiospecific synthesis of $(+)$-retronecine, $(+)$-crotonecine, and related alkaloids, 2377-84
GENESERINE
Application of a tandem electrocyclic [3,3]sigmatropic reaction of $o$-quinodimethane to the synthesis of Calabar bean alkaloids. Part 2. First total synthesis of ( $\pm$ )-geneserine, 2491-6
GIBBERELLIN
An unusual C - 7 ortho ester from 6-epi-gibberellin $\mathrm{A}_{13} . X$-Ray molecular structure of gibberellene C-7 ortho ester, 1955-8
The stereochemistry of some reactions at C-16 in gibberellins; an $X$-ray crystallographic study of the methyl esters of gibberellin $\mathrm{A}_{2}$ and gibberellin $\mathrm{A}_{9}$ hydrochloride, 1991-4

Synthesis of thiogibberellins: $X$-ray molecular and crystal structure of 19,10-thio-3-epigibberellin $\mathrm{A}_{1}, 2111-8$

## GLUCOSE

5-Thiopyranoses. Part 11. Isopropylidene acetals of 5-thio-Dglucose, 5-thio-D-allose, and 5-thio-D-altrose and some of their methyl glycosides, 1413-20
GLYCERALDEHYDE
Chiral route to cis-caronaldehyde from D-mannitol, 91-8

## GLYCINE

The biosynthesis of tuberin from tyrosine and glycine; observations on the stereochemistry associated with the conversion of glycine through methylenetetrahydrofolate into methenyltetrahydrofolate, 1593-8

## GLYCOLIPID

The allyl group for protection in carbohydrate chemistry. Part 19. The coupling of allyl $2,3-\mathrm{di}-O$-methyl-4- $O$-(3,6-di- $O$-methyl- $\beta-\mathrm{D}-$ glucopyranosyl)-x-L-rhamnopyranoside to bovine serum albumin. Preparation of a diagnostic reagent for antibodies to the major glycolipid of Mycobacterium leprae (the leprosy bacillus) in human sera, 1165-70
GLYCOPEPTIDE
Structure elucidation of the glycopeptide antibiotic complex A40926, 2103-8

## GlyCOSIDE

Triterpenoid glycosides of Corchorus acutangulus Lam., 629-34
Formation of glycosides by epoxidation-ring closure of open-chain hydroxyenol ethers obtained from sugars, 1319-24
GRIGNARD REACTION
Synthesis of new 2-mono- and 2,5-di-functionalized pyrrolidin-1oxyl spin labels, 1117-22

## GRIGNARD REA GENT

Formation of cyclized, including 3,5-cyclosteroid, alkenes from $\beta, \gamma$ unsaturated Grignard reagents induced by elimination of a $\delta$ alkoxy group, 475-80
Asymmetric conjugate addition to unsaturated chiral amido alcohols using Grignard reagents co-ordinated with tertiary amines or DBU. Preparation of optically active 3-substituted carboxylic acids and (S)-(-)-citronellol, 1909-14
Ring opening of 2 H -pyrans promoted by organometallic reagents. Synthesis of dienic alcohols, 2125-8
GUAIANOLIDE
Configuration of 1,10 -epoxyguaianolides: stereochemistry of 1,10 -epoxy- $8 x$-hydroxyachillin, 1641-4
GUANIDINE
New heterocyclization reactions for the preparation of fused [1,2,4]triazoles: synthesis of 1,2,4-triazolo[4,3$b][1,2,4]$ triazole derivatives from 4 -amino-1,2,4-triazoles and carbodi-imides or via iminophosphoranes and disubstituted thioureas, 2667-72

## GUIBOURTIA COLEOSPERMA

Synthesis of condensed tannins. Part 18. Stilbenes as potent nucleophiles in regio- and stereo-specific condensations: novel guibourtinidol-stilbenes from Guibourtia coleosperma, 1705-12
HALOGENATION
Polyaza heterocycles. Part 1. Halogenation of quinoxalino[2,3c] cinnolines by hydrogen halides, 507-14
Halogenation of phenols and phenyl ethers with potassium halides in the presence of 18 -crown- 6 on oxidation with $m$ chloroperbenzoic acid, 1423-8
HALOGEN-METAL EXCHANGE
Azoles. Part 5. Metal-halogen exchange reactions of polybromoimidazoles, 1445-52
Azoles. Part 6. A convenient synthesis of polysubstituted imidazoles from 1-protected 2,4,5-tribromoimidazoles, 1453-6

## halogenoimidazole

Azoles. Part 4. Nucleophilic substitution reactions of halogenoimidazoles, 1437-44
Azoles. Part 5. Metal-halogen exchange reactions of polybromoimidazoles, 1445-52

## HALOGENO KETONE

Hard acid and soft nucleophile systems. Part 11. Hard-soft affinity inversion: dehalogenation of $\alpha$-halogeno ketones with aluminium chloride and a thiol, 1043-8
HANTZSCH CONDENSATION
The Hantzsch synthesis with salicylaldehyde revised., 563-6
HANTZSCH THIAZOLE SYNTHESIS
The Hantzsch thiazole synthesis under acidic conditions: change of regioselectivity, 63944

## HARD ACID

Hard acid and soft nucleophile systems. Part 11. Hard-soft affinity inversion: dehalogenation of $x$-halogeno ketones with aluminium chloride and a thiol, 1043-8
HEBESTEROL
Sterols in marine invertebrates. Part 57. Stereostructure, synthesis, and acid-catalysed isomerization of hebesterol-a biosynthetically significant cyclopropyl-containing marine sterol, 1307-18
HELLMANN HAAS SYNTHESIS
Hexahydro-1,4-oxazepines. Part 2. Unambiguous synthesis, 557-8

## HETEROCYCLOTHIAZENE

Organic hererocyclothiazenes. Part 5. Cycloaddition reactions of tetrasulphur tetranitride with highly electron deficient alkynes, 2109-10
HIGHER-CARBON SUGAR
Higher-carbon sugars. Part 8. The synthesis of some decitols via the epoxidation of unsaturated precursors, 2421-6

## HISTAMINE

Reactivity of 4-amino-2-benzyl-2,3-dihydro-3-oxo-1,2,5-thiadiazole 1,1-dioxide towards amines: synthesis of potential histamine $\mathrm{H}_{2^{-}}$ receptor antagonists, 955-60
HISTRIONICOTOXIN
Model studies of histrionicotoxin. The synthesis of the 1azaspiro[5.5]undecane rings system from carbohydrate starting materials, 21-6

## HIZIKIA FUSIFORME

Isolation and identification of arsenic-containing ribofuranosides and inorganic arsenic from Japanese edible seaweed Hizikia fusiforme, 577-80
HOMOLYTIC FISSION
Thermal reactivity of $4^{\prime}$-substituted- and $4^{\prime}$-substituted-2-phenylbenzenesulphenanilides, 99-104
HOMOSERINE
Synthesis and resolution of 3-substituted morpholine appetite suppressants and chiral synthesis via O-arylhomoserines, 547-52
HOP ACID
The photolysis of trans-isohumulone to dehydrohumulinic acid, a key route to the development of sunstruck flavour in beer, 2715 8
HORNER-WITTIG
Horner-Wittig reactions of $\beta$-aminoalkyl- and $\beta$ - $N$ acylaminoalkyldiphenylphosphine oxides: synthesis of N -allyl amines and amides and 5-diphenylphosphinoyl-2-phenyl-5,6-dihydro-4H-1,3-oxazines, 1883-98
HORNER-WITTIG REACTION
Phenylthioallyl and phenylthiovinyl phosphine oxides: synthesis of 1-phenylthiobutadienes and a three-component synthesis of ketones, 967-76
Applications of the stereochemically-controlled Horner-Wittig reaction: synthesis of feniculin, $(E)$-non-6-en-1-ol, a pheromone of the mediterranean fruit fly, $(E)$ - and ( $Z$ )-dec-5-en-1-ol, trisubstituted alkenes, and ( $Z$ )-x-bisabolene, 2569-78
HOST-GUEST COMPLEX
New syntheses of calixarene-p-sulphonates and p-nitrocalixarenes, 2297-300
H.P.L.C.

Synthesis of $(25 R)-\left[26-{ }^{2} \mathrm{H}_{1}\right]$ cholesterol and ${ }^{1} \mathrm{H}$ n.m.r. and h.p.l.c. resolution of ( $25 R$ )- and ( $25 S$ )-26-hydroxycholesterol, 1713-8
HSAB PRINCIPLE
Hard acid and soft nucleophile systems. Part 11. Hard-soft affinity inversion: dehalogenation of $x$-halogeno ketones with aluminium chloride and a thiol, 1043-8
HUMULONE
The photolysis of trans-isohumulone to dehydrohumulinic acid, a key route to the development of sunstruck flavour in beer, 27158
HYDRAZONO-CROTONATE
Preparation and n.m.r. spectra of some hydrazono-malonates and -crotonates, 649-52
HYDRAZONO-MALONATE
Preparation and n.m.r. spectra of some hydrazono-malonates and -crotonates, 649-52
HYDRAZONOYL CHLORIDE
Base-promoted cyclisation of hydrazonoyl chlorides bearing an alkynylsulphonyl group, 399402
HYDRIDE TRANSFER
The chemistry of $N$-substituted benzotriazoles. Part 4. A novel and versatile method for the mono- $N$-alkylation of aromatic and heteroaromatic amines, 805-10

## HYDRINDANONE

Four isomeric 7-isopropyloctahydro- 4 H -inden-4-ones, 365-8

## HYDROGENATION

Biohydrogenation of unsaturated compounds by Saccharomyces cerevisiae. Part 1. Stereochemical aspects of the reaction and preparation of useful bifunctional chiral synthons, 1743-8
HYDROGEN BONDING
The chemistry of $N$-substituted benzotriazoles. Part 2. Reactions of benzotriazole with aldehydes and aldehyde derivatives. $1-(x-$ hydroxyalkyl)-, 1-(x-alkoxyalkyl)-, and 1-(xacyloxyalkyl)benzotriazoles, 791-8

## HYDROGENOLYSIS

Synthesis of C-19-chiral steroids. Preparation of $(19 R) ;(19 S)$ and (19RS)-3 $\beta$-hydroxy $\left[19-{ }^{2} \prod_{1}, 19-{ }^{3} \mathrm{H}_{1}\right]$ androst-5-en-17-ones, 61-70
Metal-assisted reactions: Part 19. Burst kinetics in heterogeneous catalytic transfer hydrogenolysis, 1069-76
HYDROGEN PEROXIDE
Oxidation of $N$-acyl-pyrrolidines and -piperidines with iron(II)hydrogen peroxide and an iron complex-molecular oxygen, 1259-62
HYDROGEN-TRANSFER
Saturated heterocycles. Part 88. Synthesis of a new ring system: dipyrido[1,2-a:4,3-d] pyrimidin-11-one derivatives, 909-12
HYDROLYSIS
Isolation and identification of the hydrolytic degradation products of ranitidine hydrochloride, 951-4
HYDROPEROXIDE
Photosensitised oxidation of model unsaturated lipid systems: (4Z,7Z)-undeca-4,7-diene and (4Z)-undec-4-en-7-yne, 1999-2008
HYDROXY KETONE
The chemistry of $N$-substituted benzotriazoles. Part 6. A new synthetic route to aromatic ketones, 819-24
Hypervalent iodine oxidation of silyl enol ethers. A direct route to -hydroxy ketones, 1781-4
HYDROXYLAMINE
$N$-(Alkylphenylphosphinoyl)hydroxylamines: highly selective migration of the phenyl group in the base-induced rearrangement of their $O$-methylsulphonyl derivatives, 683-8
$\mathrm{N}, \mathrm{O}$-Heterocycles. Part 18. Regiochemistry and site selectivity of N alkylhydroxylamine addition to 2,3-diphenylcyclopropenone, 961-6
HYPOBROMOUS ACID
Participation of ambident neighbouring groups in hypobromous acid addition to some steroidal olefins. Competition of electronic and stereoelectronic effects, 1969-74
IMIDAZOLE
2-Chloro-3,4-dihydroimidazole. Part 2. Synthesis of cyanines from 6-aryl-2,3-dihydro-6a $H$-imidazo $[1,2-a]$ pyrido $[1,2-c][1,3,5]$ triazin$5(6 H)$-ones. Crystal and molecular structure of 6-phenyl-2,3-dihydro- $6 \mathrm{a} H$-imidazo $[1,2-a]$ pyrido $[1,2-c][1,3,5]$ triazin- $5(6 H)$-one, 1033-8
Oxidation of a nitronyl nitroxide by copper(II) ions: synthesis and $X$-ray diffraction characterization of 4,4,5,5-tetramethyl-1-oxo-2-phenyl-4,5-dihydroimidazolium perchlorate $N(3)$-oxide, 1077-80
Synthesis and properties of 4 H -imidazoles, 1389-94
Azoles. Part 4. Nucleophilic substitution reactions of halogenoimidazoles, 1437-44
Azoles. Part 5. Metal-halogen exchange reactions of poly bromoimidazoles, 1445-52
Azoles. Part 6. A convenient synthesis of polysubstituted imidazoles from 1-protected 2,4,5-tribromoimidazoles, 1453-6
Azoles. Part 7. A convenient synthesis of thieno[2,3-d]imidazoles, 1457-64
The chemistry of nitrilium salts. Part 4. Some reactions of 5-amino-4-( $C$-cyanoformimidoyl)imidazoles obtained from nitrilium trifluoromethanesulphonate salts and diaminomaleonitrile, 1521 6
Reaction of azoles with ethyl bromopyruvate oxime: alkylation by substitution and by elimination-addition, 2235-40
Radical-nucleophilic substitution ( $S_{\text {RN }} 1$ ) reactions. Part 5. Anions of nitroimidazoles in $S_{\mathrm{RN}} 1$ and oxidative addition reactions, 281928
IMIDAZOPYRIDINE
peri-Substituted imidazo[1,2-a]pyridines. A new reductive elimination reaction, 1159-64
Azafluorenes containing two bridgehead nitrogen atoms, 2585-92
IMIDAZOPYRIDOTRIAZINONE
2-Chloro-3,4-dihydroimidazole. Part 2. Synthesis of cyanines from

IMIDAZOPYRIDOTRIAZINONE (contd)
6-aryl-2,3-dihydro-6a $H$-imidazo [1,2-a]pyrido[1,2-c][1,3,5]triazin$5(6 H)$-ones. Crystal and molecular structure of 6-phenyl-2,3-dihydro- $6 \mathrm{a} H$-imidazo $[1,2-a]$ pyrido $[1,2-c][1,3,5]$ triazin- $5(6 H)$-one, 1033-8
IMIDAZOQUINOXALINE
Hydrolysis products of flavins (isoalloxazines), 75-84

## IMIDAZOTETRAZINE

Antitumour imidazotetrazines. Part 12. Reactions of mitozolomide and its 3 -alkyl congeners with oxygen, nitrogen, halogen, and carbon nucleophiles, 665-70

## IMIDAZOTRIAZINE

Antitumour imidazotetrazines. Part 12. Reactions of mitozolomide and its 3 -alkyl congeners with oxygen, nitrogen, halogen, and carbon nucleophiles, 665-70
IMINE
Photochemistry of the carbon-nitrogen double bond. Part 2. An investigation of the 3 -methylenepropan-1-imine and 3-oxo propane-1-imine chromophores, 359-64
Studies on the scope of the aza-di- $\pi$-methane rearrangement of $\beta, \gamma$ unsaturated imines, 743-6
Reagents and synthetic methods. Part 58. Synthesis of $\beta$-lactams from acetic acids and imines promoted by Vilsmeier type reagents, $845-50$
Studies on chromone derivatives. Novel 1,3 dipolar cycloadditions of 4-oxo-1-benzopyran-3-carbaldehyde imines and imine oxides, 1995-8
$\mathrm{X}=\mathrm{Y}-\mathrm{ZH}$ Systems as potential 1,3-dipoles. Part 7.
Stereochemistry of the cycloaddition of imines of $\alpha$-amino acid esters to fumarate and maleate esters, 2275-84
$\mathrm{X}=\mathrm{Y}-\mathrm{ZH}$ Systems as potential 1,3-dipoles. Part 8. Pyrrolidines and $\Delta^{5}$-pyrrolines (3,7-diazabicyclo[3.3.0]octenes) from the reaction of imines of $x$-amino acids and their esters with cyclic dipolarophiles. Mechanism of racemisation of $\alpha$-amino acids and their esters in the presence of aldehydes, 2285-96
IMINIUM CATION
The chemistry of $N$-substituted benzotriazoles. Part 5. Reactions of benzotriazole with aldehydes and thionyl chloride - formation of (benzotriazol-1-yl)-1-chloroalkanes and
bis(benzotriazolyl)alkanes, 811-8
IMINIUM ION
Synthesis of 1,2,4-benzothiadiazines via readily generated iminium ions, 1421-0

## IMINOPHOSPHORANE

New heterocyclization reactions for the preparation of fused [1,2,4]triazoles: synthesis of 1,2,4-triazolo[4,3-b][1,2,4]triazole derivatives from 4-amino-1,2,4-triazoles and carbodi-imides or via iminophosphoranes and disubstituted thioureas, 2667-72
IMMONIUM SALT
The chemistry of $N$-substituted benzotriazoles. Part 4. A novel and versatile method for the mono- N -alkylation of aromatic and heteroaromatic amines, 805-10
INDANONE
Regiochemical control in the alkylation of tetrahydroindanones, 759-62
INDAZOLE OXIDE
$o$-Nitrobenzylidene compounds. Part 3. Formation of 4-arylamino-3-methoxycinnoline 1-oxides from N -o-nitrobenzylideneanilines, cyanide ion, and methanol: the intermediacy of 2-aryl-3-cyano2 H -indazole 1 -oxides, 495-500

## INDENE

Four isomeric 7-isopropyloctahydro-4 H -inden-4-ones, 365-8
INDENOBENZOPYRAN
Synthesis and rearrangements of $1,1^{\prime}$-bi(benzocyclobutylidene) and its derivatives, 1561-6
INDENOINDENE
Synthesis and rearrangements of $1,1^{\prime}$-bi(benzocyclobutylidene) and its derivatives, 1561-6
INDOL-3-YLACETIC ACID
Preparation of 7-hydroxy-2-oxoindolin-3-ylacetic acid and its $\left[{ }^{13} \mathrm{C}_{2}\right],\left[5-\mathrm{n}-{ }^{3} \mathrm{H}\right]$, and $\left[5-\mathrm{n}-{ }^{3} \mathrm{H}\right]-7-O$-glucosyl analogues for use in the study of indol-3-ylacetic acid catabolism, 753-8

## INDOLE

Vinyl azides in heterocyclic synthesis. Part 5. Thermal and photochemical decomposition of azidocinnamates containing ortho-cycloalkylidene substituents, 913-20
Vinyl azides in heterocyclic synthesis. Part 6. Synthesis of isoquinolines by intramolecular aza-Wittig reaction, 921-6
Vinyl azides in heterocyclic synthesis. Part 8. Synthesis of the
naturally occurring phosphodiesterase inhibitors PDE-I and PDE-II, 931-6
Synthesis of some hexahydroazocino [4,3-b]indoles, a tetra- and two hexahydropyrrolo $\left[1^{\prime}, 2^{\prime}: 1,2\right]$ pyrrolo $[3,4-b]$ indoles, and a tetrahydropyrrolo $\left[2^{\prime}, 1^{\prime}: 5,1\right]$ imidazo [3,4-a]indole. Crystal structure determination of 1,2,3,4-tetrahydro-2-phenoxycarbonyl-7-phenylsulphonylazocino[4,3-b]indol-6(5H)-one, 1599-606
The Fischer indolisation of cyclopropyl phenyl ketone and cyclobutyl phenyl ketone phenylhydrazones, 2265-8
Electrophilic substitution in indoles. Part 15. The reaction between methylenedi-indoles and p-nitrobenzenediazonium fluoroborate, 2543-52
INDOLE ALKALOID
Structure elucidation of the binary indole alkaloid uncaramine, 571-6
Aspidospermidose: a new dihydroindole alkaloid from the leaves of Rhazya stricta, 1701-4
Conversion of $N$-hydroxytryptophans into $\alpha, \beta$-dehydrotryptophan. An approach to the neoechinulin series, 2473-80
Conversion of $N$-hydroxytryptophan into $x$-functionalised tryptophans. An approach to the sporidesmin series, 2481-90
INDOLIZINE
The synthesis of diethyl p-tolylsulphonylethynylphosphonate and related acetylenes, and their reactions with nucleophiles, pyridinium-1-dicyanomethylides, and dienes, 1275-82
Stereocontrolled construction of octahydroquinolizines, octahydroindolizines, hexahydrobenzo[a]quinolizines, and an octahydroindolo [2,3-a]quinolizine by an intromolecular double Michael reaction: synthesis of $( \pm$ )-epilupinine, 1719-26
INDOLOISOQUINOLINE
The synthesis of 9,10 -dimethyl-4,6,6a,7,8,9,10,10aoctahydroindolo [3,4-gh]-isoquinoline, the 8,9-dimethyl-8-aza analogue of ergoline, 707-12

## INDOLONE

Studies on sugar nitro-olefins. Part 7. Synthesis of 3-(alditol-1-yl)-1,2,3,5,6,7-hexahydro- and -1,5,6,7-tetrahydro-indol-4-ones. $X$-Ray molecular structure of (3S)-3-(1,2,3,4,5-penta- $O$-acetyl-D-galacto-pentitol-1-yl)-1,2,3,5,6,7-hexahydroindol-4-one, 581-8

## INDOLOQUINAZOLINE

Reduction and stereochemical studies through n.m.r. and $X$-ray techniques of indolo[2,1-b]quinazolines, 519-28

## INDOLOQUINOLIZINE

Stereocontrolled construction of octahydroquinolizines, octahydroindolizines, hexahydrobenzo $[a]$ quinolizines, and an octahydroindolo[2,3-a]quinolizine by an intromolecular double Michael reaction: synthesis of $( \pm)$-epilupinine, 1719-26
INDOXAZENE OXIDE
Reactivity of 1,2 -benzisoxazole 2 oxides, 695-8
INHIBITOR
Inhibitors of human leucocyte elastase. Peptides incorporating an $\alpha$-azanorvaline residue or a thiomethylene linkage in place of a peptide bond, 111-20

## INOSITOL

The allyl group for protection in carbohydrate chemistry. Part 18. Allyl and benzyl ethers of myo-inositol. Intermediates for the synthesis of myo-inositol trisphosphates, 423-30
The allyl group for protection in carbohydrate chemistry. Part 20. Synthesis of $1 \mathrm{~L}-1-\mathrm{O}$-methyl-myo-inositol $[(+)$-bornesitol $]$ by resolution of ( $\pm$ )-1,2,4-tri- $O$-benzyl-myo-inositol, 175762
The allyl group for protection in carbohydrate chemistry. Part 21. ( $\pm$ )-1,2:5,6- and ( $\pm$ )-1,2:3,4-di- $O$-isopropylidene-myo-inositol. The unusual behaviour of crystals of $( \pm)$-3,4-di- $O$-acetyl-1,2,5,6-tetra- $O$-benzyl-myo-inositol on heating and cooling: a 'thermosalient solid', 2411-4
INSECT ATTRACTANT
Condensed cyclic and bridged-ring systems. Part 13. Synthesis of the insect attractant hydrocarbon, 9 a -carbamorphinan, and $X$-ray structural analyses of 9a-carbamorphinan-10-one and 9a-carba14 $\alpha$-morphinan-10-one, 2109-8

## INSECTICIDE

Synthesis of the Mammea coumarins. Part 3. The insecticidal coumarins of the mammea E series, mammea D/BB, and a dihydrocoumarin of the mammea $C$ series, 345-52
Synthesis of the Mammea coumarins. Part 4. Stereochemical and regiochemical studies, and synthesis of $(-)$-mammea $\mathrm{B} / \mathrm{BB}, 353-$ 8
Preparation of a chiral lactone from laevoglucosan; a key intermediate for synthesis of the spiroacetal moieties of the

INSECTICIDE (contd)
avermectins and milbemycins, 1613-22
Total synthesis of $(+)$-milbemycin $\beta_{3}, 1623-34$

## IODANE

Dialk ylcarbamoyl(diaryl)iodanes, 2759-64

## IODINE

The chemistry of pentavalent organobismuth reagents. Part 7. The possible role of radical mechanisms in the phenylation process for bismuth(v), and related lead(Iv), iodine(III), and antimony(v) reagents, 241-50
IODINE KETONE
Carbon-carbon bond formation using hypervalent iodine under Lewis acid conditions: scope of the method for the synthesis of butane-1,4-diones, 559-62
IODINE OXIDATION
Nucleoside phosphonates: Part 7. Studies on the oxidation of nucleoside phosphonate esters, 1269-74
Hypervalent iodine oxidation of silyl enol ethers. A direct route to $x$-hydroxy ketones, 1781-4
IODIUM SALT
Dialkylcarbamoyl(diaryl)iodanes, 2759-64
IODOFUNCTIONALIZATION
Stereoselective bifunctionalization of alkynes by means of the mercury(II) salt-iodine combination, 1017-20
IODOSULPHONYLATION
Synthesis of allyl and dienyl sulphones via iodosulphonylation of conjugated dienes, 2605-10

## IONOPHORE

Biosynthesis of the polyether ionophore antibiotic monensin A: assignment of the carbon-13 and proton n.m.r. spectra of monensin A by two-dimensional spectroscopy. Incorporation of oxygen-18 labelled molecular oxygen, 27-36
ION PAIR
Rearrangement of some allylic sulphinate esters to allylic sulphones. Ion-pair and sigmatropic shift mechanisms, 2149-52
ION-PAIR REARRANGEMENT
1,3-Rearrangements of some allylic sulphones, 2707-14

## ION TRANSPORT

Photoresponsive crown ethers. Part 18. Photochemically 'switchedon' crown ethers containing an intra-annular azo substituent and their application to membrane transport, 449-56

## IRON

Chiral dienolates: formation and stereoselective $\alpha$-alkylation of the lithium dienolate derived from $(Z)-\left[\left(\eta^{5}-\right.\right.$ $\left.\left.\mathrm{C}_{5} \mathrm{H}_{5}\right) \mathrm{Fe}(\mathrm{CO})\left(\mathrm{PPh}_{3}\right) \mathrm{COCH}=\mathrm{CHMe}\right] . X$-Ray crystal structure of $(R S)-(Z)-\left[\left(\eta^{5}-\mathrm{C}_{5} \mathrm{H}_{5}\right) \mathrm{Fe}(\mathrm{CO})\left(\mathrm{PPh}_{3}\right) \mathrm{COCH}=\mathrm{CHMe}\right] .489$ 94
IRON CARBONYL COMPLEX
Reaction of di-t-butoxyethyne with $\mathrm{Fe}_{2}(\mathrm{CO})_{9}: X$-ray crystal structure of (tetra-t-butoxycyclopentadienone)tricarbonyliron( 0 ) and an improved formal synthesis of hydrocroconic acid and the croconate dianion, 2749-52
IRON COMPLEX CATALYST
Oxidation of $N$-acyl-pyrrolidines and -piperidines with iron(II)hydrogen peroxide and an iron complex-molecular oxygen, 1259-62
ISOALLOXAZINE
Hydrolysis products of flavins (isoalloxazines), 75-84
ISOBACTERIOCHLORIN
Synthetic studies relevant to biosynthetic research on vitamin $\mathrm{B}_{12}$. Part 4. Development of the photochemical route to isobacteriochlorins, 1667-78
Synthetic studies relevant to biosynthetic research on vitamin $\mathrm{B}_{12}$. Part 5. Synthesis of ( $R S$ )-ring-в imide, 1679-88
ISOCOPROPORPHYRIN
Synthetic and biosynthetic studies of porphyrins. Part 9. Synthesis of isocoproporphyrin, dehydroisocoproporphyrin, and deethylisocoproporphyrin, 287-98
ISOCYANATE
Cycloadducts of nitrones with isocyanates; 1,2,4- or 1,3,4oxadiazolidinones?, 2593-6
ISOFLAVONE
Flavonoids of Tephrosia procumbens-revised structure for praecansone A and conformation of praecansone B, 2723 - 8
ISOFLAVONE EPOXIDE
Acid-catalysed coupling reactions and conversions of isoflavone epoxides, 1081-8
ISOGUANOSINE
The conversion of the $2^{\prime}, 3^{\prime}-O$-isopropylidene derivative of 5 -amino-

1- $\beta$-D-ribofuranosylimidazole-4-carboxamide (AICA riboside) into $2^{\prime}, 3^{\prime}-O$-isopropylidene-isoguanosine, 1527-32
ISOHUMULONE
The photolysis of trans-isohumulone to dehydrohumulinic acid, a key route to the development of sunstruck flavour in beer, 2715-8

## ISOMERASE

Metabolism of $2^{\prime}, 4,4^{\prime}$-trihydroxychalcone in Amorpha fruticosa seedlings; structure and role of chalaurenol, a novel heterocyclic enol ether formed by enzymic oxidation, 2775-82

## ISONIMOLICINOLIDE

Studies in the chemical constituents of Azadirachta indica A. Juss (Meliaceae). Part 10. Isolation and structure elucidation of isonimolicinolide, the first 17-acetoxy tetranortriterpenoid and nimolicinoic acid, the first hexanortriterpenoid with an Apoeuphane (Apotirucallane) skeleton, 1429-32
ISOPENTYL PYROPHOSPHATE
Facile and stereospecific synthesis of ( $S$ )- and ( $R$ )-[2- $\left.{ }^{2} \mathrm{H}\right]$ isopentenyl pyrophosphates, 2845-8
ISOPIMARIC ACID
Stereochemistry of the tetrahydroisopimaric acids: $X$-ray structure of methyl $8 x$-isopimaran-18-oate, 1975-8

## ISOPRISTIMERIN

Studies on terpenoids and steroids. Part 10. Structures of four new natural phenolic D: A-friedo-24-noroleanane triterpenoids, 284954

## ISOQUINOLINE

Tetrahydroisoquinolines. Part 3. Stereoselective synthesis of cis- and trans-1,4-disubstituted $N$-methyl-1,2,3,4-tetrahydroisoquinolines as their tricarbonylchromium complexes, 689-94
Vinyl azides in heterocyclic synthesis. Part 6. Synthesis of isoquinolines by intramolecular aza-Wittig reaction, 921-6
ISOQUINOLINE ALKALOID
Regioselective total synthesis of ( $\pm$ )-berberastine, 2565-8
ISOQUINOLONE
Vinyl azides in heterocyclic synthesis. Part 9. Synthesis of the isoquinolone alkaloid siamine by intramolecular aza-Wittig reaction, 1395-8
ISOTHIAZOLOQUINOLINE
Nitrile sulphides. Part 7. Synthesis of [1]benzopyrano[4,3$c$ ]isothiazoles and isothiazolo[4,3-c]quinolines, $2339-44$
ISOTHIOSEMICARBAZONE
Cyclization of isothiosemicarbazones. Part 7. Synthesis of $N$ -alkenyl-1,2,4-triazoles with anti-Saytzeff orientation, 1567-72
ISOTOPIC LABELLING
Preparation of 7-hydroxy-2-oxoindolin-3-ylacetic acid and its $\left[{ }^{3} \mathrm{C}_{2}\right],\left[5-\mathrm{n}-{ }^{3} \mathrm{H}\right]$, and $\left[5-\mathrm{n}-{ }^{3} \mathrm{H}\right]-7-\mathrm{O}$-glucosyl analogues for use in the study of indol-3-ylacetic acid catabolism, 753-8

## ISOXAZOLE

$N, O$-Heterocycles. Part 18. Regiochemistry and site selectivity of $N$ alkylhydroxylamine addition to 2,3-diphenylcyclopropenone, 961-6
A new spiro annellation reaction in the isoxazole series: applications and limits. Part 2. Reactivity of ethyl 4-nitro-3-phenylisoxazole-5-carboxylate with nitrogen binucleophiles, 1005-10
ISOXAZOLIDINONE
Ketene. Part 26. The reactions of 3,4-dihydroisoquinoline $N$-oxide with ketenes, and an attempted synthesis of 3,4-dihydro-3,3dimethylquinoline $N$-oxide, $1635-40$
JAPANESE EDIBLE SEAWEED
Isolation and identification of arsenic-containing ribofuranosides and inorganic arsenic from Japanese edible seaweed Hizikia fusiforme, 577-80

## KAURENE

Structural elucidation of new diterpenoids isolated from Rabdosia umbrosa var. leucantha f. Kameba, 2403-10
KETENE
Ketene. Part 25. Mechanistic studies of the reaction of nitrile oxides with ketenes, 567-70
Ketene. Part 26. The reactions of 3,4-dihydroisoquinoline $N$-oxide with ketenes, and an attempted synthesis of 3,4-dihydro-3,3dimethylquinoline $N$-oxide, 1635-40

## KETENE ACETAL

Ketene $S, N$-acetals as synthetic intermediates for heterocycles. Reaction of ketene $S, N$-acetals with 1,4-quinones, 1501-4

## KETENE DITHIOACETAL

Polarised ketene dithioacetals. Part 50. Reactions of $x$-aroyl- $x$ bromoketene dithioacetals with hydrazine hydrate: formation of rearranged pyrazoles, 1945-50

## KETENE IMINE

Chemistry of silyl thioketones. Part 3. Cycloaddition reactions with heterodienes ( $x$-nitrosostyrene and ketene imines), 2647-52

## KETONE

The chemistry of $N$-substituted benzotriazoles. Part 6. A new synthetic route to aromatic ketones, 819-24
Reaction of $\alpha$-halogeno ketones with carbonyl compounds promoted by $\mathrm{CeI}_{3}, \mathrm{CeCl}_{3}-\mathrm{NaI}$, or $\mathrm{CeCl}_{3}-\mathrm{SnCl}_{2}, 1473-$ ${ }_{8}^{\text {pro }}$
Reaction of diazonium salts with transition metals. Part 13. Palladium-catalyzed carbonylative coupling of arenediazonium salts with organotin reagents to give aromatic ketones, 15114

## KNOEVENAGEL REACTION

Stereochemistry in the Knoevenagel reaction of methyl arylsulphinylacetate and aldehydes, 825-30

## KOKOONA ZEYLANICA

Studies on terpenoids and steroids. Part 10. Structures of four new natural phenolic D: A-friedo-24-noroleanane triterpenoids, 284954
LABELLING
Preparation of 7-hydroxy-2-oxoindolin-3-ylacetic acid and its $\left[{ }^{13} \mathrm{C}_{2}\right],\left[5-\mathrm{n}-{ }^{3} \mathrm{H}\right]$, and $\left[5-\mathrm{n}-{ }^{3} \mathrm{H}\right]-7-\mathrm{O}$-glucosyl analogues for use in the study of indol-3-ylacetic acid catabolism, 753-8
New methods for probing the chirality of ${ }^{18} \mathrm{O}$-labelled phosphinic acids, 1813-6
In vitro production and biosynthesis of fomajorin D and S by Fomes annosus (Fr.) Cooke, 1869-72
${ }^{11} \mathrm{C}$-Labelling of substance P . Preparation of a homocysteinecontaining precursor and its subsequent application in the synthesis of the labelled neuropeptide, 2241-8
Metabolites of Aspergillus ustus. Part 4. Stable-isotope labelling studies on the biosynthesis of the austalides, 2253-8
On the role of leucine in terpenoid metabolism, 2427-36
LABELLING STUDY
Ketene. Part 25. Mechanistic studies of the reaction of nitrile oxides with ketenes, 567-70
LACTAM
Spirocyclic penicillins, 635-8
Reagents and synthetic methods. Part 58. Synthesis of $\beta$-lactams from acetic acids and imines promoted by Vilsmeier type reagents, 845-50
Alkene cyclisations of $N$-alkenyl- $\alpha$-(methylsulphinyl)acetamides and $N$-alkenyl- $x$-chloro- $\alpha$-(methylthio)acetamides: novel synthesis of five-, six-, and seven-membered lactams, 1099-106
New approaches to the synthesis of $\beta$-lactam antibiotics, 1237-42
Wittig reactions with $\beta$-lactam carbonyl functions. The effect of C 7 substitution on the chemistry of penicillins and clavulanic acid derivatives, 1369-76
Synthesis of benzocarbacephem and benzocarbapenem derivatives by copper-promoted intramolecular aromatic substitution, 1899908
2-Bromo-3-methoxycyclohex-2-enone, a new reagent for the $x$ arylation of lactams, 2153-6
Total synthesis of analogues of the $\beta$-lactam antibiotics. Part 3. 2Ethoxycarbonyl derivatives of carbapen-1-em-3-exo-carboxylates and carbapenam-3-exo-carboxylates, 2361-70

## LACTONE

Enantiotopic-group differentiation. Catalytic asymmetric ringopening of prochiral cyclic acid anhydrides with methanol, using cinchona alkaloids, 1053-8
Configuration of 1,10 -epoxyguaianolides: stereochemistry of $1,10-$ epoxy-8 $x$-hydroxyachillin, 1641-4
A three-step procedure for the conversion of $\gamma$-lactones into $\delta$ lactones, 2469-72
Transformation of santonin into ( + )-deoxyvernolepin and related dilactones, 2833-8

## LEAD

The chemistry of pentavalent organobismuth reagents. Part 7. The possible role of radical mechanisms in the phenylation process for bismuth(v), and related lead(IV), iodine(III), and antimony(v) reagents, 241-50
The chemistry of aryl-lead(Iv) tricarboxylates. Reaction with vinylogous $\beta$-keto esters, 2689-94
Use of the electrophilic arylation reaction of aryl-lead triacetates in a synthesis of $( \pm)$-lycoramine, 2695-700

## LEAD ACETATE

Oxidative rearrangement of aryl ethyl ketones to alkyl 2arylpropanoates by lead(IV) acetate, 1433-6

## LEUCINE

On the role of leucine in terpenoid metabolism, 2427-36
LEUKOTRIENE ANALOGUE
The synthesis of aromatic leukotriene analogues; regioselective trapping of 2,4'-dilithiophenylethyne, 1573-8
LEWIS ACID
Lewis acid-promoted conjugate reduction of $\alpha, \beta$-unsaturated carbonyl compounds by 2-phenylbenzothiazoline (2-phenyl-2,3dihydrobenzothiazole), 699-706
LINALYL DIPHOSPHATE
Hydrolysis of bismetallic complexes of linalyldiphosphate and their participation in the biosynthesis of cyclic monoterpenes, 1479-84
LIPIARMYCIN
Structure elucidation of the macrocyclic antibiotic lipiarmycin, 1353-60

## LIPID

Photosensitised oxidation of model unsaturated lipid systems: (4Z,7Z)-undeca-4,7-diene and (4Z)-undec-4-en-7-yne, 1999-2008

## LIPOPHILICITY

Structural studies on bio-active compounds. Part 5. Synthesis and properties of 2,4-diaminopyrimidine dihydrofolate reductase inhibitors bearing lipophilic azido groups, 2217-28
LIQUID MEMBRANE
Specific $\mathrm{Ag}^{+}$ion binding and transport properties of 'tripod' type open-chain cryptands, 1697-700

## LITHIATION

The lithiation of 1-(phenylthiomethyl)benzimidazole and related compounds, 775-80
The chemistry of $N$-substituted benzotriazoles. Part 1. 1(Chloromethyl) benzotriazole, 781-90
The chemistry of $N$-substituted benzotriazoles. Part 6. A new synthetic route to aromatic ketones, 819-24

## LITHIUM

Azoles. Part 5. Metal-halogen exchange reactions of polybromoimidazoles, 1445-52
Azoles. Part 6. A convenient synthesis of polysubstituted imidazoles from 1-protected 2,4,5-tribromoimidazoles, 1453-6

## LITHIUM ALUMINIUM HYDRIDE

The preparation and absolute configuration of the optically active forms of the diastereoisomers of 2-(1-phenylethyl)amino-1phenylethanol and their use as chiral auxiliaries in the asymmetric reduction of acetophenone with modified lithium aluminium hydrides, 601-6
LITHIUM REAGENT
Total synthesis of $(+)$-milbemycin $\beta_{3}$, 1623-34
LITSENOLIDE
The total synthesis of ( - )-litsenolides C-1 and C-2, 2681-8
LUPINUS LUTEUS
Application of ${ }^{2} \mathbf{H}$ n.m.r. spectroscopy to study the incorporation of enantiomeric ${ }^{2} \mathrm{H}$-labelled cadaverines into quinolizidine alkaloids, 105-10
LYCORAMINE
Use of the electrophilic arylation reaction of aryl-lead triacetates in a synthesis of $( \pm)$-lycoramine, 2695-700
MACROCYCLE
The formation of complexes between aza derivatives of crown ethers and primary alkylammonium salts. Part 9. Bicyclic derivatives of diaza crown ethers, 1921-8

## MACROCYCLIC DIESTER

Pyrrolizidine alkaloid analogues. Synthesis of 10 -membered macrocyclic diesters of $( \pm)$-synthanecine A. $X$-Ray molecular structure of ( $\pm$ )-6,7-O,O-(succinyl)synthanecine A, 2069-72
MACROCYCLIC LACTONE
Structure elucidation of the macrocyclic antibiotic lipiarmycin, 1353-60
MACROLIDE
Novel semisynthetic oxo and alkyl macrolide antibacterials and related derivatives, 1189-210
MALEIMIDE
Thermal cycloaddition of N -arylmaleimides to phenols: the convenient synthesis of bicyclo[2.2.2]oct-2-en-5-one and tricyclo [3.3.0.0 ${ }^{2.8}$ ]octan-2-one derivatives from phenols, 1147-52
MAMMEA
Synthesis of the Mammea coumarins. Part 1. The coumarins of the mammea A, B, and C series, 317-32
Synthesis of the Mammea coumarins. Part 2. Experiments in the mammea E series and synthesis of mammea $\mathrm{E} / \mathrm{AC}, 333-44$

## MAMMEA (contd)

Synthesis of the Mammea coumarins. Part 3. The insecticidal coumarins of the mammea E series, mammea $\mathrm{D} / \mathrm{BB}$, and a dihydrocoumarin of the mammea C series, 345-52
Synthesis of the Mammea coumarins. Part 4. Stereochemical and regiochemical studies, and synthesis of ( - )-mammea B/BB, 353 8
Synthesis of the Mammea coumarins. Part 1. The coumarins of the Mammea A, B, and C series, 1421-2
MAMMEA AMERICANA
Synthesis of the Mammea coumarins. Part 1. The coumarins of the mammea A, B, and C series, 317-32
Synthesis of the Mammea coumarins. Part 2. Experiments in the mammea E series and synthesis of mammea E/AC, $333-44$
Synthesis of the Mammea coumarins. Part 3. The insecticidal coumarins of the mammea E series, mammea D/BB, and a dihydrocoumarin of the mammea C series, 345-52
Synthesis of the Mammea coumarins. Part 4. Stereochemical and regiochemical studies, and synthesis of ( - )-mammea B/BB, 353 8
MANNITOL
Chiral route to cis-caronaldehyde from D-mannitol, 91-8
MARINE ADHESIVE PROTEIN
Synthesis and adhesive studies of marine polypeptides, 613-8
MARINE SPONGE
Aaptamines. Novel benzo[de][1,6]naphthyridines from the Okinawan marine sponge Aaptos aaptos, 173-6
MARINE STEROL
Synthesis and stereochemistry of 23,24-dihydrocalysterol: implications for marine sterols of a unified biosynthetic scheme involving protonated cyclopropanes, 1283-90
Synthesis and stereochemistry of ficisterol and norficisterol: biosynthetic implications, 1291-306
Sterols in marine invertebrates. Part 57. Stereostructure, synthesis, and acid-catalysed isomerization of hebesterol-a biosynthetically significant cyclopropyl-containing marine sterol, 1307-18
MARKOWNIKOFF RULE
Participation of ambident neighbouring groups in hypobromous acid addition to some steroidal olefins. Competition of electronic and stereoelectronic effects, 1969-74

## MASS SPECTROMETRY

A study of three reactions leading to isomeric 2 -( $N, N$-disubstituted amino)thiazol-5-yl ketones, 2311-6
MELDRUM'S ACID
Preparation and n.m.r. spectra of some hydrazono-malonates and -crotonates, 649-52
Synthesis of pyrrolo [1,2-c]imidazol-5-one, pyrrolo[1,2-a]imidazol-5one and pyrrolo $[1,2-b]$ pyrazol- 6 -one (three isomeric azapyrrolizinones), by pyrolysis of Meldrum's acid derivatives, 653-6
Stereospecific synthesis of N -protected statine and its analogues ria chiral tetramic acid, 1177-82

## MELIACEA

Studies in the chemical constituents of Azadirachta indica A. Juss (Meliaceae). Part 10. Isolation and structure elucidation of isonimolicinolide, the first 17-acetoxy tetranortriterpenoid and nimolicinoic acid, the first hexanortriterpenoid with an Apoeuphane (Apotirucallane) skeleton, 1429-32
MERCAPTOMETHYLATION
Carbanions derived from 2-alkylthiobenzothiazoles. A novel $\alpha$ lithiomethyl mercaptan synthon for mercaptomethylation, 76974
MERCURY
Stereoselective bifunctionalization of alkynes by means of the mercury(II) salt-iodine combination, 1017-20
MERCURY(II) PERCHLORATE
The conversion of the $2^{\prime}, 3^{\prime}$ - $O$-isopropylidene derivative of 5 -amino1 - $\beta$-D-ribofuranosylimidazole-4-carboxamide (AICA riboside) into $2^{\prime}, 3^{\prime}-O$-isopropylidene-isoguanosine, 1527-32

## MESOIONIC

Organic heterocyclothiazenes. Part 2. Reaction of tetrasulphur tetranitride with phenylacetylene and diphenylacetylene, 20710
MESOPORPHYRIN
Synthetic and biosynthetic studies of porphyrins. Part 7. The action of coproporphyrinogen oxidase on coproporphyrinogen-IV: syntheses of protoporphyrin-XIII, mesoporphyrin XIII, and related tricarboxylic porphyrins, 265-76

## MESQUITOL

Synthesis of condensed tannins. Part 19. Phenol oxidative coupling of $(+)$-catechin and $(+)$-mesquitol. Conformation of bis $(+)$ catechins, 2345-52

## METABOLITE

Preparation of acyltetronic acids using t-butyl acetothioacetate: total synthesis of the fungal metabolites carolic, carlosic, and carlic acids, 121-30
Naturally occurring dibenzofurans. Part 9. A convenient synthesis of phthalides: the synthesis of methyl di- $O$-methylporphyrilate, 231-6
Synthesis of triphenylene 1,2-oxide (1,2-epoxy-1,2dihydrophenylene) and absolute configuration of the trans-1,2dihydro diol metabolite of triphenylene. Crystal structure of ( - )( $1 R, 2 R$ )-trans-2-bromo-1-menthyloxyacetoxy-1,2,3,4tetrahydrotriphenylene, 369-76
Preparation of a chiral lactone from laevoglucosan; a key intermediate for synthesis of the spiroacetal moieties of the avermectins and milbemycins, 1613-22
Metabolites of Aspergillus ustus. Part 4. Stable-isotope labelling studies on the biosynthesis of the austalides, 2253-8

## METACYCLOPHANE

Metacyclophanes and related compounds. Part 16. Preparation of 8 -fluoro-t-butyl[2.2]metacyclophanes and their treatment with aluminium chloride-nitromethane in benzene, 1-8
METAL-CATALYSED ADDITION
Ruthenium(II)- and rhenium(III)-catalysed addition of tetrahalogenomethanes to alkenes and $1, \omega$-dienes. Stereoselective formation of $c i s$-1,2-disubstituted cyclopentanes from 1,6-dienes, 1515-20
METALLATION
The 3,4-dihydro-2 $H$-pyran approach to $(+)$-milbemycin $\beta_{3}$. Part 1. An alternative synthesis of ( $2 S, 4 S, 6 R, 8 R, 9 S$ )-2-formylmethyl-4-(dimethyl-t-butylsilyloxy)-8,9-dimethyl-1,7dioxaspiro[5.5]undecane, 2183-8
The 3,4 -dihydro- $2 H$-pyran approach to $\left(+\right.$ )-milbemycin $\beta_{3}$. Part 2. An improved synthesis of $(2 R, 4 S, 6 S, 8 R, 9 S)-2-[(5 R)-(2 E)-3-$ methyl-5-formyl-hex-2-en-1-yl]-8,9-dimethyl-4-(dimethyl-t-butylsilyloxy)-1,7-dioxaspiro[5,5]undecane, 2189-94
METALLIC COMPLEX
Hydrolysis of bismetallic complexes of linalyldiphosphate and their participation in the biosynthesis of cyclic monoterpenes, 147984

## METALLO-PORPHYRIN

Synthesis and electrochemical properties of some metallated and peripherally substituted porphyrin co-facial dimers, 2395402
METAPHOSPHONIMIDATE
Influence of ortho methyl and isopropyl substituents on the reactivity of $N$-t-butyl $P$-arylphosphonamidic chlorides with isopropylamine and t-butylamine: steric acceleration of metaphosphonimidate formation by an elimination-addition mechanism; contrasting behaviour of $N, N$-dimethyl $P$ arylphosphonamidic chlorides, 1399-406
METHANONAPHTHALENE
Synthesis of substituted dibenzophospholes. Part 5. Synthesis of intermediates for 4 - and 6 -aryl substituents, 851-8

## METHYLENEDI-INDOLE

Electrophilic substitution in indoles. Part 15. The reaction between methylenedi-indoles and $p$-nitrobenzenediazonium fluoroborate, 2543-52

## METHYLENEDIONE

Studies on the syntheses of heterocyclic compounds containing benzopyrone. Part 5 . Total synthesis of fulvic acid, 389-94

## METRONIDAZOLE

Photolytic rearrangement of metronidazole to $N$-(2-hydroxyethyl)5 -methyl-1,2,4-oxadiazole-3-carboxamide. Crystal structure of its 4-nitrobenzoate derivative, 1817-20

## MEVALONOLACTONE

A new flexible synthesis of ( $R, S$ )-mevalonolactone, 2301-4
MICHAEL REACTION
1,2-Asymmetric induction in intramolecular Michael reaction. A novel and enantioselective route to $(+)$-Geissman lactone, 9931004
MICROBIAL REDUCTION
Production of ( $R$ )-1-(1,3-dithian-2-yl)propan-2-ol by microbial reduction, 1607-8
MICROBIAL TRANSFORMATION
Microbial transformations of sesquiterpenoids: conversion of deoxyvulgarin by Rhizopus nigricans and Aspergillus ochraceous, 471-4

## MILBEMYCIN

Use of $S$-t-butyl acetothioacetate in the preparation of milbemycin seco-analogues, 131-6
Preparation of a chiral lactone from laevoglucosan; a key intermediate for synthesis of the spiroacetal moieties of the avermectins and milbemycins, 1613-22
Total synthesis of $(+)$-milbemycin $\beta_{3}, 1623-34$
A directed aldol approach to ( + )-milbemycin $\beta_{3}, 2171-82$
The 3,4-dihydro-2H-pyran approach to $(+)$-milbemycin $\beta_{3}$. Part 1. An alternative synthesis of $(2 S, 4 S, 6 R, 8 R, 9 S)$-2-formylmethyl-4-(dimethyl-t-butylsilyloxy)-8,9-dimethyl-1,7dioxaspiro[5.5]undecane, 2183-8
The 3,4-dihydro-2H-pyran approach to $(+)$-milbemycin $\beta_{3}$. Part 2. An improved synthesis of $(2 R, 4 S, 6 S, 8 R, 9 S)-2-[(5 R)-(2 E)-3-$ methyl-5-formyl-hex-2-en-1-yl]-8,9-dimethyl-4-(dimethyl-t-butylsilyloxy)-1,7-dioxaspiro[5,5]undecane, 2189-94
MITOZOLOMIDE
Antitumour imidazotetrazines. Part 12. Reactions of mitozolomide and its 3-alkyl congeners with oxygen, nitrogen, halogen, and carbon nucleophiles, 665-70
MITSUNOBO REACTION
New methods for probing the chirality of ${ }^{18} \mathrm{O}$-labelled phosphinic acids, 1813-6
MITSUNOBU
The reaction of diols with triphenylphosphine and di-isopropyl azodicarboxylate. Part 2. Formation of cyclic phosphoranes from 1,5-1,12-diols, 2057-60
MNDO CALCULATION
Polyaza heterocycles. Part 1. Halogenation of quinoxalino[2,3c] cinnolines by hydrogen halides, 507-14
MO CALCULATION
An unexpected double cycloaddition of [1,2,4]triazolo[1,5a] pyrimidine $N$-ylide with activated acetylenes and alkenes, 2531-8
MONENSIN
Biosynthesis of the polyether ionophore antibiotic monensin A: assignment of the carbon-13 and proton n.m.r. spectra of monensin A by two-dimensional spectroscopy. Incorporation of oxygen-18 labelled molecular oxygen, 27-36

## MONOSACCHARIDE

5-Thiopyranoses. Part 12. Sulphur participation in displacement reactions of sulphonate esters of 5-thio-D-allose, 5-thio-D-altrose, and 5-thio-D-glucose derivatives, 2061-8
MORPHOLINE
Synthesis and resolution of 3-substituted morpholine appetite suppressants and chiral synthesis via O-arylhomoserines, 54752
Hexahydro-1,4-oxazepines. Part 1. Synthesis by morpholine ring expansion, 553-6
MORTIERELLA RAMANNIANA
Resolution of 7,7-dimethylbicyclo[3.2.0]hept-2-en-6-one using Mortierella ramanniana and $3 x, 20 \beta$-hydroxy-steroid dehydrogenase, photochemistry of 3-hydroxy-7,7-dimethylbicyclo[3.2.0]heptan-6-ones, and the synthesis of $(+)$ eldanolide, 903-8
MULTIFUNCTIONAL CARBON COMPOUND
Chemistry of novel compounds with multifunctional carbon structure. Part 2. The first example of optically active multifunctional carbon compounds, 2203-8

## MUSCARINE

Dichloromethylenation of sugar $\gamma$-lactones: a stereospecific synthesis of $\mathrm{L}-(+)$-muscarine and $\mathrm{L}-(+)$-epimuscarine toluene- $p$ sulphonates, 661-4
MYCOBACTERIUM LEPRAE
The allyl group for protection in carbohydrate chemistry. Part 19. The coupling of allyl 2,3-di- $O$-methyl-4- $O$-(3,6-di- $O$-methyl- $\beta$-d-glucopyranosyl)-x-L-rhamnopyranoside to bovine serum albumin. Preparation of a diagnostic reagent for antibodies to the major glycolipid of Mycobacterium leprae (the leprosy bacillus) in human sera, 1165-70
NAPHTHALENETRIONE
Dienone-phenol rearrangement of naphthalenetriones. A route to 10-acetoxy-5,6,7,8-tetrahydrophenanthrene-1,4-diones, 2855
NAPHTHOQUINOLIZINE
Syntheses of condensed polycyclic azonia aromatic compounds by photocyclization, 481-8
NAPHTHOQUINONE
A revised structure for dehydrotectol and tecomaquinone I, 18214

The structure and synthesis of nepenthone-A, a naphthoquinone from Nepenthes rafflesiana, 2017-22
NEIGHBOURING GROUP EFFECT
Participation of ambident neighbouring groups in hypobromous acid addition to some steroidal olefins. Competition of electronic and stereoelectronic effects, 1969-74
Neighbouring group participation in the reduction of the diterpenoid fujenal, 1987-90

## NEOECHINULIN

Conversion of $N$-hydroxytryptophans into $\alpha, \beta$-dehydrotryptophan. An approach to the neoechinulin series, 2473-80

## NEPENTHES RAFFLESIANA

The structure and synthesis of nepenthone-A, a naphthoquinone from Nepenthes rafflesiana, 2017-22

## NEPENTHONE

The structure and synthesis of nepenthone-A, a naphthoquinone from Nepenthes rafflesiana, 2017-22
NEUROPEPTIDE
${ }^{11} \mathrm{C}$-Labelling of substance P . Preparation of a homocysteinecontaining precursor and its subsequent application in the synthesis of the labelled neuropeptide, 2241-8
NICOTINE
Bromination of certain aryl substituted pyrrolidines, 1049-52
NIMOLICINOIC ACID
Studies in the chemical constituents of Azadirachta indica A. Juss (Meliaceae). Part 10. Isolation and structure elucidation of isonimolicinolide, the first 17-acetoxy tetranortriterpenoid and nimolicinoic acid, the first hexanortriterpenoid with an Apoeuphane (Apotirucallane) skeleton, 1429-32
NITRATION
New syntheses of calixarene-p-sulphonates and p-nitrocalixarenes, 2297-300
NITRENE
Intramolecular reactions of $N$-nitrenes: description of the transition state geometry for addition to alkenes, 1135 46
Synthesis and properties of 4 H -imidazoles, 1389-94
Alkoxycarbonylnitrenes as selective intramolecular CH -insertion reagents in alicyclic chemistry, 1553-60
Asymmetric induction in addition of $N$-nitrenes to alkenes: 2-(chiral)-substituted benzimidazole-derived $N$-nitrene additions to alkenes, 2787-96
Asymmetric induction in addition of $N$-nitrenes to alkenes: oxidation of 3-amino-2-(1,2,2-trimethylpropyl)quinazolin-4(3H)one in the presence of $\alpha$-methylene- $\gamma$-butyrolactone: conformational analysis of the aziridines formed and comparison with alkanoylated cyclopropylamines, 2797-802
Chiral aziridination of $\alpha, \beta$-unsaturated esters and ketones using $N$ nitrenes in the presence of trifluoroacetic acid, 2803-8
NITRENIUM COMPLEX
Inter- and intra-molecular aromatic $N$-substitution by arylnitrenium-aluminium chloride complexes generated from aryl azides in the presence of aluminium chloride, 57-60

## NITRILE

Photochemical reactions of nitrile compounds. Part 2. Photochemistry of an $\alpha, \beta$-unsaturated $\gamma, \delta$-cyclopropyl nitrile, 1937-44

## NITRILE IMINE

1,3-Dipolar cycloaddition reactions of nitrilium betaines with aryl thiocyanates and selenocyanates, 607-12
NITRILE OXIDE
Ketene. Part 25. Mechanistic studies of the reaction of nitrile oxides with ketenes, 567-70
1,3-Dipolar cycloaddition reactions of nitrilium betaines with aryl thiocyanates and selenocyanates, 607-12
NITRILE SULPHIDE
1,3-Dipolar cycloaddition reactions of nitrilium betaines with aryl thiocyanates and selenocyanates, 607-12
Nitrile sulphides. Part 7. Synthesis of [1]benzopyrano[4,3c]isothiazoles and isothiazolo[4,3-c]quinolines, 2339-44
NITRILIMINE
Base-promoted cyclisation of hydrazonoyl chlorides bearing an alkynylsulphonyl group, 399-402

## NITRILIUM SALT

The chemistry of nitrilium salts. Part 4. Some reactions of 5-amino-4-( $C$-cyanoformimidoyl)imidazoles obtained from nitrilium trifluoromethanesulphonate salts and diaminomaleonitrile, 15216

## NITRIMINE

On the formation and nitrogen nuclear magnetic resonance spectra

## NITRIMINE (contd)

of some nitrimines ('pernitroso-ketones'), and the mechanism of oxime cleavage by nitrous acid, 2073-8

## NITRO ALCOHOL

Preparation of 1-nitro-1,3-dienes via nitrotrifluoroacetoxylation of 1,3-dienes, 2737-42
NITROALKENE
Regioselective Diels-Alder reactions. The nitro group as a regiochemical control element, 1929-36
NITROGEN EXTRUSION
Synthesis and properties of 4 H -imidazoles, 1389-94

## NITRONATE

Triphenylmethyl phenylcyanomethylenenitronate: formation and thermolysis, 2163-70

## NITRONE

Synthesis of new 2-mono- and 2,5-di-functionalized pyrrolidin-1oxyl spin labels, 1117-22
Ketene. Part 26. The reactions of 3,4-dihydroisoquinoline $N$-oxide with ketenes, and an attempted synthesis of 3,4-dihydro-3,3dimethylquinoline $N$-oxide, 163540
Studies on chromone derivatives. Novel 1,3 dipolar cycloadditions of 4-oxo-1-benzopyran-3-carbaldehyde imines and imine oxides, 1995-8
Cycloadducts of nitrones with isocyanates; 1,2,4- or 1,3,4oxadiazolidinones?, 2593-6
NITROSATIVE DEOXIMATION
On the formation and nitrogen nuclear magnetic resonance spectra of some nitrimines ('pernitroso-ketones'), and the mechanism of oxime cleavage by nitrous acid, 2073-8
NITROSIMINE
On the formation and nitrogen nuclear magnetic resonance spectra of some nitrimines ('pernitroso-ketones'), and the mechanism of oxime cleavage by nitrous acid, 2073-8
NITROSOALKENE
Reaction of azoles with ethyl bromopyruvate oxime: alkylation by substitution and by elimination-addition, 2235-40
Formation of 2-acetylpyridines by the base-catalysed ring opening of dihydro- 4 H -furo [2,3-e] oxazines, $2505-10$
NITROTRIFLUOROACETOXYLATION
Preparation of 1-nitro-1,3-dienes via nitrotrifluoroacetoxylation of 1,3-dienes, 2737-42

## NITROXIDE

Oxidation of a nitronyl nitroxide by copper(II) ions: synthesis and $X$-ray diffraction characterization of 4,4,5,5-tetramethyl-1-oxo-2-phenyl-4,5-dihydroimidazolium perchlorate $N(3)$-oxide, 1077-80
Synthesis of new 2-mono- and 2,5-di-functionalized pyrrolidin-1oxyl spin labels, 1117-22
N.M.R.

Biosynthesis of the polyether ionophore antibiotic monensin A: assignment of the carbon-13 and proton n.m.r. spectra of monensin A by two-dimensional spectroscopy. Incorporation of oxygen-18 labelled molecular oxygen, 27-36
14 -Methyl steroids. Part 4. Synthesis of $14 \beta$-methylestradiol and related $14 \beta$-methyl-19-norsteroids, 37-44
Application of ${ }^{2} \mathrm{H}$ n.m.r. spectroscopy to study the incorporation of enantiomeric ${ }^{2} \mathbf{H}$-labelled cadaverines into quinolizidine alkaloids, $105-10$
Pyrrolizidine alkaloid biosynthesis. Incorporation of ${ }^{13} \mathrm{C}$-labelled precursors into rosmarinine, 177-80
Nuclear magnetic resonance and conformational studies on monoacetylated methyl D-gluco-and D-galacto-pyranosides, 377-84
Reduction and stereochemical studies through n.m.r. and $X$-ray techniques of indolo[2,1-b]quinazolines, 519-28
Structure elucidation of the binary indole alkaloid uncaramine, 571-6
Isolation and identification of arsenic-containing ribofuranosides and inorganic arsenic from Japanese edible seaweed Hizikia fusiforme, 577-80
Preparation and n.m.r. spectra of some hydrazono-malonates and -crotonates, 649-52
An analysis of the n.m.r. spectra $\left({ }^{1} \mathrm{H},{ }^{13} \mathrm{C}\right.$, and, in part ${ }^{15} \mathrm{~N}$ and ${ }^{17} \mathrm{O}$ ) of pyrrolizin-3-one, and of its aza-derivatives pyrrolo[1,2c] imidazol-5-one, pyrrolo [1,2-a]imidazol-5-one and pyrrolo[1,2b] pyrazol-6-one, 657-60
Application of ${ }^{2} \mathrm{H}$ n.m.r. spectroscopy to study the incorporation of enantiometric $\left[2-{ }^{2} \mathrm{H}\right]$-labelled putrescines into the pyrrolizidine alkaloid retrorsine, 1089-94

Studies on conformationally restricted, disiloxane bridged analogues of the enkephalins, 1107-16
Nucleoside phosphonates: Part 7. Studies on the oxidation of nucleoside phosphonate esters, 1269-74
Synthesis of ring-a and -в substituted $17 x$-acetoxypregnan-20-one derivatives with potential activity on the digitalis receptor in cardiac muscle, 1361-8
Propentdyopents [5-(2-oxo-2 H -pyrrol-5-ylmethylene)pyrrol-2(5 H )ones] and related compounds. Part 2. The $Z \rightleftarrows E$
photoisomerisation of pyrromethenone systems, 1383-8
Gas phase rearrangement reactions of 2-(arylamino)phenylaminyl radicals, 1407-12
Aspidospermidose: a new dihydroindole alkaloid from the leaves of Rhazya stricta, 1701-4
Synthesis of condensed tannins. Part 18. Stilbenes as potent nucleophiles in regio- and stereo-specific condensations: novel guibourtinidol-stilbenes from Guibourtia coleosperma, 1705-12
$X$-Ray structural studies of stereoisomeric bi( 14 H dibenzo $4,5: 6,7][1,3]$ diazepino $[2,1-a]$ isoindol-14-ylidene)s obtained from the reaction of $2,2^{\prime}$-diaminobiphenyl with $o$ phthalaldehyde, 1763-70
On the formation and nitrogen nuclear magnetic resonance spectra of some nitrimines ('pernitroso-ketones'), and the mechanism of oxime cleavage by nitrous acid, 2073-8
Structure elucidation of the glycopeptide antibiotic complex A40926, 2103-8
Chemistry of novel compounds with multifunctional carbon structure. Part 2. The first example of optically active multifunctional carbon compounds, 2203-8
Structural studies on bio-active compounds. Part 6. Determination of the sites of protonation on three 2,4-diaminopyrimidines of pharmaceutical importance by proton-coupled ${ }^{15} \mathrm{C}$ and ${ }^{1} \mathrm{H}$ nuclear magnetic resonance spectroscopy, 2229-34
Cycloadducts of nitrones with isocyanates; $1,2,4$ or $1,3,4-$ oxadiazolidinones?, 2593-6
The chemistry of $N$-substituted benzotriazoles. Part 7. The isomeric composition and mechanism of interconversion of some $N$ (aminomethyl)benzotriazole derivatives, 2673-80
The structure of citrinin in vivo, 2743-4
N.O.E.

Synthesis of some hexahydroazocino $[4,3-b]$ indoles, a tetra- and two hexahydropyrrolo $\left[1^{\prime}, 2^{\prime}: 1,2\right]$ pyrrolo $[3,4-b]$ indoles, and a tetrahydropyrrolo $\left[2^{\prime}, 1^{\prime}: 5,1\right]$ imidazo $[3,4-a]$ indole. Crystal structure determination of $1,2,3,4$-tetrahydro-2-phenoxycarbonyl-7-phenylsulphonylazocino[4,3-b]indol-6( 5 H )-one, 1599-606

## NON-BENZENE AROMATIC

Synthesis and properties of methano bridged tetradehydro[18]annulene, -[20]annulene, -[22]annulene, -[24]annulene, and the related [1,3]cyclophanpolyenediyne compounds, 831-44
NORFICISTEROL
Synthesis and stereochemistry of ficisterol and norficisterol: biosynthetic implications, 1291-306

## NOROLEANANE

Studies on terpenoids and steroids. Part 10. Structures of four new natural phenolic D: A-friedo-24-noroleanane triterpenoids, 284954

## NORRISH TYPE 1

The photolysis of trans-isohumulone to dehydrohumulinic acid, a key route to the development of sunstruck flavour in beer, 2715$\stackrel{8}{8}$
NUCLEOPHILIC DISPLACEMENT
The chemistry of $N$-substituted benzotriazoles. Part 5. Reactions of benzotriazole with aldehydes and thionyl chloride-formation of (benzotriazol-1-yl)-1-chloroalkanes and bis(benzotriazolyl)alkanes, 811-8
NUCLEOPHILIC SUBSTITUTION
The chemistry of $N$-substituted benzotriazoles. Part 1. 1(Chloromethyl)benzotriazole, 781-90
NUCLEOSIDE
Nucleoside phosphonates: Part 7. Studies on the oxidation of nucleoside phosphonate esters, 1269-74
The conversion of the $2^{\prime}, 3^{\prime}-O$-isopropylidene derivative of 5 -amino-$1-\beta$-D-ribofuranosylimidazole-4-carboxamide (AICA riboside) into $2^{\prime}, 3^{\prime}-O$-isopropylidene-isoguanosine, 1527-32
Ribonucleoside cyclic $3^{\prime}, 5^{\prime}$-phosphoramidates: synthesis, stereochemistry, and conversion into ribonucleoside cyclic $3^{\prime}, 5^{\prime}$ phosphorothioates and $-\left[{ }^{18} \mathrm{O}\right]$ phosphates, 1645-56
Reaction of 5-trifluoromethyl-2'-deoxyuridine and 1-methyl-5trifluoromethyluracil with methoxyamine: model studies for the

## NUCLEOSIDE (contd)

interaction between thymidylate synthetase and 5-
trifluoromethyl-2'-deoxyuridine 5'-phosphate, 2141-8
OBSCURINERVIDINE
Total synthesis of heptacyclic Aspidosperma alkaloids. Part 1. Preliminary experiments, 2079-90
OLEFIN
Stereoselective olefin formation from the dehydration of 1-( $p-$ alkoxyphenyl)-1,2-diphenylbutan-1-ols: application to the synthesis of tamoxifen, 1011-6
Selectivity and charge transfer in photoreactions of donor-acceptor systems. Part 10. meta Photocycloadditions of $m$ -
bis(trifluoromethyl)benzene and trifluoromethyl benzonitriles to olefins, 2333-8

## OLEFIN FORMATION

Stereochemistry in the Knoevenagel reaction of methyl arylsulphinylacetate and aldehydes, 825-30

## OLIGOSACCHARIDE

Synthesis of oligosaccharides corresponding to biological repeating units of Shigella flexneri variant Y polysaccharide. Part 1. Overall strategy, synthesis of a key trisaccharide intermediate, and synthesis of a pentasaccharide, 9-14
OLIVE FLY
Isolation and synthesis of 1,7-dioxaspiro[5.5]undecane and 1,7-dioxaspiro[5.5]undecan-3- and -4-ols from the olive fly (Dacus oleae), 1123-8
OPTICAL RESOLUTION
Chemistry of novel compounds with multifunctional carbon structure. Part 2. The first example of optically active multifunctional carbon compounds, 2203-8
ORCHID PIGMENT
The structure and synthesis of the novel orchid pigments dengibsin and dengibsinin, 2553-64
ORGANOMETALLIC
Asymmetric oxidation of sulphides to sulphoxides catalysed by titanium complexes of $N$-salicylidene-L-amino acids, 71-4
ORGANOMETALLIC REAGENT
Ring opening of 2 H -pyrans promoted by organometallic reagents. Synthesis of dienic alcohols, 2125-8
ORTHO ESTER
An unusual C -7 ortho ester from 6-epi-gibberellin $\mathrm{A}_{13} . X$-Ray molecular structure of gibberellene C-7 ortho ester, 1955-8
OXA-AZATRICYCLOTRIDECATETRAENE
The Hantzsch synthesis with salicylaldehyde revised., 563-6
OXABICYCLO-OCTENONE
Thromboxane $\mathrm{A}_{2}$ analogues from 8-oxabicyclo[3.2.1]oct-6-en-3ones, 1657-66
OXACARBENE
Photolysis of 2,3-epoxy-7,7-diphenylbicyclo[3.2.0]heptan-6-ones and 2-exo, 3-exo-dihydroxy-7,7-diphenylbicyclo[3.2.0]heptan-6-one, 85-90
OXADIAZABICYCLOHEPTENE
Studies related to penicillins. Part 23. Preparation of the $N$ phenylacetyl and $N$-triphenylmethyl derivatives of ( $3 R, 4 R$ )-3-amino-4-t-butylthioazetidin-2-one, 2009-16
OXADIAZOLIDINONE
Cycloadducts of nitrones with isocyanates; $1,2,4$ - or $1,3,4$ oxadiazolidinones?, 2593-6
OXADIAZOLE
Photolytic rearrangement of metronidazole to N -(2-hydroxyethyl)-5-methyl-1,2,4-oxadiazole-3-carboxamide. Crystal structure of its 4-nitrobenzoate derivative, 1817-20
OXANOSINE
The conversion of the $2^{\prime}, 3^{\prime}-O$-isopropylidene derivative of 5-amino1 - $\beta$-D-ribofuranosylimidazole-4-carboxamide (AICA riboside) into $2^{\prime}, 3^{\prime}-O$-isopropylidene-isoguanosine, 1527-32
OXAZEPANE
Hexahydro-1,4-oxazepines. Part 1. Synthesis by morpholine ring expansion, 553-6
Hexahydro-1,4-oxazepines. Part 2. Unambiguous synthesis, 557-8 OXAZINE

Horner-Wittig reactions of $\beta$-aminoalkyl- and $\beta$ - $N$ acylaminoalkyldiphenylphosphine oxides: synthesis of $N$-allyl amines and amides and 5-diphenylphosphinoyl-2-phenyl-5,6-dihydro-4H-1,3-oxazines, 1883-98

## OXAZOLINE

Vinyl azides in heterocyclic synthesis. Part 9. Synthesis of the isoquinolone alkaloid siamine by intramolecular aza-Wittig reaction, 1395-8

## OXEPINE

Ketene $S, N$-acetals as synthetic intermediates for heterocycles. Reaction of ketene $S, N$-acetals with 1,4-quinones, 1501-4

## OXIDATION

Asymmetric oxidation of sulphides to sulphoxides catalysed by titanium complexes of $N$-salicylidene-L-amino acids, 71-4
The chemistry of pentavalent organobismuth reagents. Part 8. Phenylation and oxidation of alcohols by tetraphenylbismuth esters, 251-60
Oxidation of a nitronyl nitroxide by copper(II) ions: synthesis and $X$-ray diffraction characterization of 4,4,5,5-tetramethyl-1-oxo-2-phenyl-4,5-dihydroimidazolium perchlorate $N(3)$-oxide, 1077-80
The reactivity of silyl ethers to the Swern reagent, 1221-4
Oxidation of $N$-acyl-pyrrolidines and -piperidines with iron(iI)hydrogen peroxide and an iron complex-molecular oxygen, 1259-62
Acid-catalysed intramolecular $C$-alkylation in $\beta, \gamma$-unsaturated diazomethyl ketones. Part 5. Synthesis of functionalised hydrofluorene derivatives via novel fragmentation reactions, 1263-8
Nucleoside phosphonates: Part 7. Studies on the oxidation of nucleoside phosphonate esters, 1269-74
Hypervalent iodine oxidation of silyl enol ethers. A direct route to x-hydroxy ketones, 1781-4
Synthesis of some tetrahydrosantonin derivatives with functionalised angular substituents based on remote oxidation, 1793-8
Photosensitized oxidation of furans. Part 12. Solvent effects in thermal rearrangement of the 2,5 -peroxides of 2,5 -unsubstituted furans, 183340
Chlorous acid oxidation of trifluoromethylphenols: cyclopentenolones by benzilic acid ring contraction, 1861-4
Pyrrole studies. Part 35. Aerial oxidation of 4 -substituted 3 -amino-2,5-dimethylpyrroles. An $X$-ray crystallographic and spectroscopic study of the oxidation products, 1959-62

## OXIDATIVE ADDITION

Radical-nucleophilic substitution ( $S_{\text {RN1 }} 1$ ) reactions. Part 5. Anions of nitroimidazoles in $S_{\mathrm{RN}} 1$ and oxidative addition reactions, 281928
oxidative coupling
Synthesis of condensed tannins. Part 19. Phenol oxidative coupling of $(+)$-catechin and $(+)$-mesquitol. Conformation of bis $(+)$ catechins, 2345-52
OXIDATIVE REARRANGEMENT
Oxidative rearrangement of aryl ethyl ketones to alkyl 2arylpropanoates by lead(IV) acetate, 1433-6

## OXIME

Cyanide substitution in aryl halides by copper(I) complexes derived from formamide and from formaldehyde oxime, 619-22
On the formation and nitrogen nuclear magnetic resonance spectra of some nitrimines ('pernitroso-ketones'), and the mechanism of oxime cleavage by nitrous acid, 2073-8
OXIME ETHER
Photochemistry of the carbon-nitrogen double bond. Part 2. An investigation of the 3 -methylenepropan-1-imine and 3-oxo propane-1-imine chromophores, 359-64
OXIRANE
Photochemical reactions of nitrile compounds. Part 2. Photochemistry of an $\alpha, \beta$-unsaturated $\gamma, \delta$-cyclopropyl nitrile, 1937-44
OXO ESTER
Studies on the stereochemical control of fermenting baker's yeast mediated reductions: some 3- and 4-oxo esters, 2753-8
OXOINDOLINE
Preparation of 7-hydroxy-2-oxoindolin-3-ylacetic acid and its $\left[{ }^{1} \mathrm{C}_{2}\right],\left[5-\mathrm{n}-{ }^{3} \mathbf{H}\right]$, and $\left[5-\mathrm{n}^{3} \mathrm{H}\right]-7-O$-glucosyl analogues for use in the study of indol-3-ylacetic acid catabolism, 753-8
OXOPHLORIN
Synthetic and biosynthetic studies of porphyrins. Part 11. The synthesis of meso oxygenated protoporphyrins, 307-12
meso-Reactivity of porphyrins and related compounds. Part 9. Photo-oxygenation of octaethyloxophlorin, 1063-8
OXYALLYL
Thromboxane $A_{2}$ analogues from 8-oxabicyclo[3.2.1]oct-6-en-3ones, 1657-66
OXYGENATION
meso-Reactivity of porphyrins and related compounds. Part 9. Photo-oxygenation of octaethyloxophlorin, 1063-8

## OXYGEN LABELLING

New methods for probing the chirality of ${ }^{18} \mathrm{O}$-labelled phosphinic acids, 18136
OZONATE
Reactions of carboxylic acid derivatives with superoxide, 945-8

## OZONOLYSIS

A new flexible synthesis of ( $R, S$ )-mevalonolactone, 2301-4
Transformation of santonin into $(+)$-deoxyvernolepin and related dilactones, 2833-8
PALLADIUM-CATALYSED CARBOXYLATION
Catalysis by palladium salts. Part 2. Palladium-catalysed carboxylation with carbon monoxide of aromatic compounds working under mild conditions, 2625-30
PALLADIUM CATALYSIS
Substituted 4H-1-benzopyran-4-ones (chromones): synthesis via palladium-catalysed coupling of their halogeno derivatives with alkenes, 2597-604

## PALLADIUM CATALYST

Reaction of diazonium salts with transition metals. Part 13. Palladium-catalyzed carbonylative coupling of arenediazonium salts with organotin reagents to give aromatic ketones, 1511-4

## PARAFFIN

Studies on the synthesis of linear aliphatic compounds. Part 2. The realisation of a strategy for repeated molecular doubling, 244754
Studies on the synthesis of linear aliphatic compounds. Part 3. The synthesis of paraffins with very long chains, 2455-64
Studies on the synthesis of linear aliphatic compounds. Part 4. An approach to long-chain paraffins with lateral side-chains, 2465-8
PARATROPICITY
Cyclo-octa[def]carbazole, a new heterocyclic paratropic ring system, 403-12
PENAM
Studies on amino acid derivatives. Part 7. General method for the synthesis of penam and cepham and their substituted derivatives., 1845--52
PENEM
Stereospecific synthesis of a chiral intermediate for the preparation of thienamycin, penems, and carbapenems: use of the nitro group as a hydroxy protecting group, 2637-42
PENICILLIN
Spirocyclic penicillins, 635-8
Wittig reactions with $\beta$-lactam carbonyl functions. The effect of C7 substitution on the chemistry of penicillins and clavulanic acid derivatives, 1369-76
Spirocyclic penicillins, 1873-4
Studies related to penicillins. Part 23. Preparation of the $N$ phenylacetyl and $N$-triphenylmethyl derivatives of ( $3 R, 4 R$ ) -3-amino-4-t-butylthioazetidin-2-one, 2009-16

## PEPTIDE

Inhibitors of human leucocyte elastase. Peptides incorporating an $x$-azanorvaline residue or a thiomethylene linkage in place of a peptide bond, 111-20
${ }^{11} \mathrm{C}$-Labelling of substance P . Preparation of a homocysteinecontaining precursor and its subsequent application in the synthesis of the labelled neuropeptide, 2241-8
Synthesis of sequential polydepsipeptides involving depsipeptide formation by the 2 -nitrophenylsulphenyl $N$-carboxy $\alpha$-amino acid anhydride (Nps-NCA) method, 2249-52
PEPTIDE SYNTHESIS
Renin substrates. Part 2. Rapid solid phase synthesis of the ratine sequence tetradecapeptide using BOP reagent, 1915-20
PERIINTERACTION
peri-Substituted imidazo $[1,2-a]$ pyridines. A new reductive elimination reaction, 1159-64

## PEROXIDASE

Enzyme-mediated $\mathrm{H}_{2} \mathrm{O}_{2}$ oxidation of $(E)$-stilbene-3,4-diol, 2719-22
Metabolism of $2^{\prime}, 4,4^{j^{\prime}}$-trihydroxychalcone in Amorpha fruticosa seedlings; structure and role of chalaurenol, a novel heterocyclic enol ether formed by enzymic oxidation, 2775-82
PEROXIDE
Reactions of carboxylic acid derivatives with superoxide, 945-8
Synthesis of 16 -substituted 17 -nor-13x-steroids and skeletal rearrangement of 17 -nor- $5 x, 13 x$-androstane-16x-carbonyl $m$ chlorobenzoyl peroxide, 1247-54
Photosensitized oxidation of furans. Part 12. Solvent effects in thermal rearrangement of the 2,5-peroxides of 2,5 -unsubstituted furans, 1833-40

## PETERSON REACTION

An approach to the total synthesis of the Prelog-Djerassi lactone, 537-46
PHASEOLLIN
Synthesis of the phytoalexin ( $\pm$ )-phaseollin: 3-phenylthiochromans as masked 2 H -chromenes and $o$-prenyl phenols, 431-8
PHASE-TRANSFER
Gas-liquid phase-transfer catalysis: Wittig-Horner reaction in heterogeneous conditions, 7134
Continuous conversion of alcohols into alkyl halides by gas-liquid phase-transfer catalysis (G.L.-P.T.C.), 2157-8
Alkylation reactions of ethyl malonate, ethyl acetoacetate, and acetylacetone by gas-liquid phase-transfer catalysis (G.L.-P.T.C.), 2159-62
PHENACYL BROMIDE
Synthesis of 6,7 -dihydro- 5 H -1,2,4-triazolo $[3,4-b][1,3,4]$ thiadiazines by a C-C ring cyclization under mild conditions, 1853-60

## PHENALENE

The preparation of $2,3,3 \mathrm{a}, 4,5,6$-hexahydro-8-methoxy- 1 H -phenalene. 173942

## PHENANTHRENEDIONE

Dienone-phenol rearrangement of naphthalenetriones. A route to 10-acetoxy-5,6,7,8-tetrahydrophenanthrene-1,4-diones, 2855
PHENOL
Synthesis of the phytoalexin ( $\pm$ )-phaseollin: 3-phenylthiochromans as masked 2 H -chromenes and $o$-prenyl phenols, 431-8
Halogenation of phenols and phenyl ethers with potassium halides in the presence of 18 -crown- 6 on oxidation with $m$ chloroperbenzoic acid, 1423-8
Selective ortho-alkylation of phenols with sulphoxides via [2,3]sigmatropic rearrangement: synthesis of coumarins, 1753 6
Reactions of polyfluoro-arenols and -heteroarenols with activated dimethyl sulphoxide. Facile [2,3]-sigmatropic rearrangement reactions giving de-aromatised products, 2091-8
PHENOL OXIDATION
Chlorous acid oxidation of trifluoromethylphenols: cyclopentenolones by benzilic acid ring contraction, 1861-4
PHENYLATION
The chemistry of pentavalent organobismuth reagents. Part 8 . Phenylation and oxidation of alcohols by tetraphenylbismuth esters, 251-60
PHENYL GROUP MIGRATION
$N$-(Alkylphenylphosphinoyl)hydroxylamines: highly selective migration of the phenyl group in the base-induced rearrangement of their $O$-methylsulphonyl derivatives, 683-8
PHENYLTHIO MIGRATION
Allyl sulphide synthesis by phenylthio migration: relationship between stereochemistry of starting materials and regioselectivity of double bond formation, 2579-84

## PHEROMONE

Isolation and synthesis of 1,7-dioxaspiro[5.5]undecane and 1,7dioxaspiro[5.5] undecan-3- and 4 -ols from the olive fly (Dacus oleae), 1123-8
Applications of the stereochemically-controlled Horner-Wittig reaction: synthesis of feniculin, $(E)$-non-6-en-1-ol, a pheromone of the mediterranean fruit fly, $(E)$ - and ( $Z$ )-dec-5-en-1-ol, trisubstituted alkenes, and ( $Z$ )-x-bisabolene, 2569-78
PHLOROGLUCINOL
Condensed tannins. Base-catalysed reactions of polymeric procyanidins with phloroglucinol: intramolecular rearrangements, 1875-82
PHOSPHATE
Ribonucleoside cyclic $3^{\prime}, 5^{\prime}$-phosphoramidates: synthesis, stereochemistry, and conversion into ribonucleoside cyclic $3^{\prime} .5^{\prime}$ phosphorothioates and - $\left[{ }^{18} \mathrm{O}\right]$ phosphates, 1645-56
PHOSPHINE
Reactions of tris(2,6-dimethoxyphenyl)phosphine with epoxides, 1514
The reaction of diols with triphenylphosphine and di-isopropyl azodicarboxylate. Part 2. Formation of cyclic phosphoranes from 1,5-1,12-diols, 2057-60
PHOSPHINE OXIDE
Horner-Wittig reactions of $\beta$-aminoalkyl- and $\beta-N$ acylaminoalkyldiphenylphosphine oxides: synthesis of $N$-allyl amines and amides and 5-diphenylphosphinoyl-2-phenyl-5,6-dihydro-4H-1,3-oxazines, 1883-98
Applications of the stereochemically-controlled Horner-Wittig reaction: synthesis of feniculin, ( $E$ )-non-6-en-1-ol, a pheromone of

## PHOSPHINE OXIDE (contd)

the mediterranean fruit fly, $(E)$ - and ( $Z$ )-dec-5-en-1-ol, trisubstituted alkenes, and ( $Z$ )- $\alpha$-bisabolene, 2569-78
PHOSPHINIC ACID
New methods for probing the chirality of ${ }^{18} \mathrm{O}$-labelled phosphinic acids, 1813-6

## PHOSPHODIESTERASE INHIBITOR

Vinyl azides in heterocyclic synthesis. Part 8. Synthesis of the naturally occurring phosphodiesterase inhibitors PDE-I and PDE-II, 931-6
PHOSPHONAMIDIC CHLORIDE
Influence of ortho methyl and isopropyl substituents on the reactivity of $N$-t-butyl $P$-arylphosphonamidic chlorides with isopropylamine and t-butylamine: steric acceleration of metaphosphonimidate formation by an elimination-addition mechanism; contrasting behaviour of $N, N$-dimethyl $P$ arylphosphonamidic chlorides, $1399-406$
PHOSPHONATE
Carbon-carbon bond forming reactions via $\alpha$-phosphoryl- $\alpha$-thio carbocations, 1095-8
The synthesis of diethyl p-tolylsulphonylethynylphosphonate and related acetylenes, and their reactions with nucleophiles, pyridinium-1-dicyanomethylides, and dienes, 1275-82
PHOSPHONATE CARBANION
Studies on selected transformations of some fluoromethanephosphonate esters, 181-6
PHOSPHONATE ESTER
Nucleoside phosphonates: Part 7. Studies on the oxidation of nucleoside phosphonate esters, 1269-74
PHOSPHORAMIDATE
Ribonucleoside cyclic $3^{\prime}, 5^{\prime}$-phosphoramidates: synthesis, stereochemistry, and conversion into ribonucleoside cyclic $3^{\prime}, 5^{\prime}$ phosphorothioates and $-\left[{ }^{18} \mathrm{O}\right]$ phosphates, $1645-56$
PHOSPHORANE
Vinyl azides in heterocyclic synthesis. Part 6. Synthesis of isoquinolines by intramolecular aza-Wittig reaction, 9216
The reaction of diols with triphenylphosphine and di-isopropyl azodicarboxylate. Part 2. Formation of cyclic phosphoranes from 1,5-1,12-diols, 2057-60
PHOSPHORINANIUM SALT
Tandem Wittig reactions of 1,1-diphenylphosphorinanium salt, 1537-40
PHOSPHOROTHIOATE
Ribonucleoside cyclic $3^{\prime}, 5^{\prime}$-phosphoramidates: synthesis, stereochemistry, and conversion into ribonucleoside cyclic $3^{\prime}, 5^{\prime}$ phosphorothioates and $-\left[{ }^{18} \mathrm{O}\right]$ phosphates, 1645-56
PHOSPHORYLATION
Synthesis of substrates of cyclic AMP-dependent protein kinase and use of their protected precursors for the convenient preparation of phosphoserine peptides, 529-36
PHOSPHOSERINE PEPTIDE
Synthesis of substrates of cyclic AMP-dependent protein kinase and use of their protected precursors for the convenient preparation of phosphoserine peptides, 529-36
PHOTOCHEMICAL CYCLOADDITION
Photochemical cycloadditions of 1,3-dioxoles to anisole, 15-20 PHOTOCHEMISTRY

Photochemistry of the carbon-nitrogen double bond. Part 2. An investigation of the 3 -methylenepropan-1-imine and 3-oxo propane-1-imine chromophores, 359-64
Studies on the scope of the aza-di- $\pi$-methane rearrangement of $\beta$, $\gamma$ unsaturated imines, 743-6
Synthesis of 1,2-diazetidinones (aza- $\beta$-lactams) by photochemical ring contraction, 877-84
Regioselectivity in the photochemical ring contraction of 4-diazopyrazolidine-3,5-diones to give aza- $\beta$-lactams, 885-98
Resolution of 7,7-dimethylbicyclo[3.2.0]hept-2-en-6-one using Mortierella ramanniana and $3 x, 20 \beta$-hydroxy-steroid dehydrogenase, photochemistry of 3-hydroxy-7,7-dimethylbicyclo[3.2.0]heptan-6-ones, and the synthesis of $(+)$ eldanolide, 903-8
Intramolecular functionalization of $N$-cyanamide radicals: synthesis of 1,4-and 1,5- $N$-cyanoepimino compounds, 937-44
Photochemistry of organo-halogenic molecules. Part 20. The effect of cycloalkene structure on the $[2+2]$ photocycloaddition to hexafluorobenzene, 981-6
Photochemical reactions of pyridine-4-thiones and acridine-9thiones with alkenes, 1225-8

Synthetic studies relevant to biosynthetic research on vitamin $B_{12}$.
Part 4. Development of the photochemical route to isobacteriochlorins, 1667-78
Photochemical synthesis of bithienyl derivatives, 1777-80
Photolytic rearrangement of metronidazole to $N$-(2-hydroxyethyl)-5-methyl-1,2,4-oxadiazole-3-carboxamide. Crystal structure of its 4-nitrobenzoate derivative, 1817-20
Photochemical reactions of nitrile compounds. Part 2.
Photochemistry of an $\alpha, \beta$-unsaturated $\gamma, \delta$-cyclopropyl nitrile, 1937-44
Photosensitised oxidation of model unsaturated lipid systems: (4Z,7Z)-undeca-4,7-diene and (4Z)-undec-4-en-7-yne, 19992008
Photochemical reactions of pyrimidinethiones with alkenes, 252330
Steroids Part 22. Photochemistry of 5,6-epoxy-4,4-dimethylcholestan-3-ones and 5,6-epoxy-17-hydroxy-4,4-dimethylestran-3-ones, 2653-8
Conformation dependent photochemistry of dienes. Substituent effects on the photochemical reactions of some 4-acyloxy-2-azabuta-1,3-dienes, 2663-6
PHOTOCYCLIZATION
Syntheses of condensed polycyclic azonia aromatic compounds by photocyclization, 481-8
Synthesis of $8,9,10,11,12,13,13 \mathrm{a}, 14$-octahydro- 7,$11 ; 9,13$ dimethanoazonino $[1,2-b]$ isoquinolin- $5(7 H)$-ones and some related derivatives by photocyclization reactions of 5-methylene-4-aroyl- and -acryloyl-4-azatricyclo[4.3.1.1 ${ }^{3,8}$ ]undecanes (4azahomoadamantanes), 1171-6
PHOTOCYCLOADDITION
Photochemistry of organo-halogenic molecules. Part 20. The effect of cycloalkene structure on the $[2+2]$ photocycloaddition to hexafluorobenzene, 981-6
Selectivity and charge transfer in photoreactions of donor-acceptor systems. Part 10. meta Photocycloadditions of $m$ bis(trifluoromethyl)benzene and trifluoromethyl benzonitriles to olefins, 2333-8
Photochemical reactions of pyrimidinethiones with alkenes, 252330
Photocycloaddition of quinoxalin-2-ones and benzoxazin-2-ones to aryl alkenes, 2611-6
PHOTOISOMERISATION
Photoresponsive crown ethers. Part 18. Photochemically 'switchedon' crown ethers containing an intra-annular azo substituent and their application to membrane transport, 449-56
Propentdyopents [5-(2-oxo-2H-pyrrol-5-ylmethylene)pyrrol-2(5H)ones] and related compounds. Part 2 . The $Z \rightleftarrows E$ photoisomerisation of pyrromethenone systems, 1383-8
PHOTOLACTONIZATION
Synthesis of thiogibberellins: $X$-ray molecular and crystal structure of 19,10-thio-3-epigibberellin $\mathrm{A}_{1}, 2111-8$
PHOTOLYSIS
Photolysis of 2,3-epoxy-7,7-diphenylbicyclo[3.2.0]heptan-6-ones and 2-exo, 3-exo-dihydroxy-7,7-diphenylbicyclo[3.2.0]heptan-6-one, 85-90
Cyclo-octa[def]carbazole, a new heterocyclic paratropic ring system, 403-12
Photolysis of 1-aryl-1,2,3-triazoles; rearrangement via 1 H -azirines, 413-22
Reactions of carbamyl (urethanyl) radicals: intramolecular aromatic additions, 1243-6
Synthesis and properties of 4 H -imidazoles, 1389-94
Photolytic rearrangement of metronidazole to $N$-(2-hydroxyethyl)-5-methyl-1,2,4-oxadiazole-3-carboxamide. Crystal structure of its 4-nitrobenzoate derivative, 1817-20
The photolysis of trans-isohumulone to dehydrohumulinic acid, a key route to the development of sunstruck flavour in beer, 27158
PHOTO-OXYGENATION
meso-Reactivity of porphyrins and related compounds. Part 9. Photo-oxygenation of octaethyloxophlorin, 1063-8
PHOTORESPONSIVE CROWN ETHER
Photoresponsive crown ethers. Part 18. Photochemically 'switchedon' crown ethers containing an intra-annular azo substituent and their application to membrane transport, 449-56

## PHOTOSENSITIZED OXIDATION

Photosensitized oxidation of furans. Part 12. Solvent effects in thermal rearrangement of the 2,5-peroxides of 2,5 -unsubstituted furans, 183340

## PHTHALIDE

Naturally occurring dibenzofurans. Part 9. A convenient synthesis of phthalides: the synthesis of methyl di-O-methylporphyrilate. 231-6

## PHYTOALEXIN

Synthesis of the phytoalexin ( $\pm$ )-phaseollin: 3-phenylthiochromans as masked 2 H -chromenes and $o$-prenyl phenols, 431-8
Enzyme-mediated $\mathrm{H}_{2} \mathrm{O}_{2}$ oxidation of ( $E$ )-stilbene-3,4-diol, 271922
PIPERAZINE
Studies on fungal products. Part 13. Isolation and structures of dithiosilvatin and silvathione, novel dioxopiperazine derivatives from Aspergillus silvaticus, 2099-102
Conversion of $N$-hydroxytryptophans into $x, \beta$-dehydrotryptophan. An approach to the neoechinulin series, 2473-80
Conversion of $N$-hydroxytryptophan into $x$-functionalised tryptophans. An approach to the sporidesmin series, 2481-90
PIPERIDINE
Oxidation of $N$-acyl-pyrrolidines and -piperidines with iron(II)hydrogen peroxide and an iron complex-molecular oxygen, 1259-62
PIPERIDINEDIONE
The synthesis of 3-(4-aminotetrafluorophenyl)-3-ethylpiperidine-2.6dione; a fluorinated derivative of aminoglutethimide, 2129-36
PIPEROLIDE
Synthetic routes to the piperolides, fadyenolides, epoxypiperolides, and related compounds, 717-42
PLANT TISSUE CULTURE
On the role of leucine in terpenoid metabolism, 2427-36
POLYETHER
Biosynthesis of the polyether ionophore antibiotic monensin A: assignment of the carbon-13 and proton n.m.r. spectra of monensin A by two-dimensional spectroscopy. Incorporation of oxygen-18 labelled molecular oxygen, 27-36
POLYETHYLENE
Studies on the synthesis of linear aliphatic compounds. Part 3. The synthesis of paraffins with very long chains, 2455-64
Studies on the synthesis of linear aliphatic compounds. Part 4. An approach to long-chain paraffins with lateral side-chains, 2475-8
POLY(ETHYLENE GLYCOL)
Diazotization and Sandmeyer reactions of arylamines in poly(ethylene glycol)-methylene dichloride: usefulness of PEG in synthetic reactions, 645-8
Usefulness of poly(ethylene glycol) in synthetic reactions. Part 10. Deamination of arylamines via dediazoniation by tinhydrochloric acid in poly(ethylene glycol)-methylene dichloride, $1951-4$
POLYPEPTIDE
Synthesis and adhesive studies of marine polypeptides, 613-8
POLYSACCHARIDE
New triterpenoid pentasaccharides from Androsace saxifragifolia, 1963-8
Synthesis of the trisaccharide component of the repeating unit of the capsular polysaccharide of Streptococcus pneumoniae Type 19F. 2745-8
PORPHYRILIC ACID
Naturally occurring dibenzofurans. Part 9. A convenient synthesis of phthalides: the synthesis of methyl di- $O$-methylporphyrilate. 231-6
PORPHYRIN
meso-Reactivity of porphyrins and related compounds. Part 9. Photo-oxygenation of octaethyloxophlorin, 1063-8
Autoxidation and solvolysis products of octaethylverdohaemochrome, 1183-8
Cyclizations of terminally substituted $a, c$-biladiene salts to give meso-substituted porphyrins, 1229-36
Biosynthesis of porphyrins and related macrocycles. Part 28. Development of a pulse labelling method to determine the $C$ methylation sequence for vitamin $B_{12} ., 1689-96$
Biosynthesis of porphyrins and related macrocycles. Part 29. Synthesis and chemistry of 2,2-disubstituted $2 H$-pyrroles (pyrrolenines), 2027-48
Synthesis of bipyridyl-, viologen-, and quinone-bridged porphyrins, 2385-94
Synthesis and electrochemical properties of some metallated and peripherally substituted porphyrin co-facial dimers, 2395-402
PORPHYRIN BIOSYNTHESIS
Synthetic and biosynthetic studies of porphyrins. Part 7. The action
of coproporphyrinogen oxidase on coproporphyrinogen-IV: syntheses of protoporphyrin-XIII, mesoporphyrin XIII, and related tricarboxylic porphyrins, 265-76
Synthetic and biosynthetic studies of porphyrins. Part 8. Syntheses of hepta-, hexa-, and penta-carboxylic porphyrins related to uroporphyrin-I, 277-86
Synthetic and biosynthetic studies of porphyrins. Part 9. Synthesis of isocoproporphyrin, dehydroisocoproporphyrin, and deethylisocoproporphyrin, 287-98
Synthetic and biosynthetic studies of porphyrins. Part 10. Syntheses of porphyrins with acetic, propionic, and butyric acid side-chains for biosynthetic studies, 299-306
Synthetic and biosynthetic studies of porphyrins. Part 11. The synthesis of meso oxygenated protoporphyrins, 307-12
PRAECANSONE
Flavonoids of Tephrosia procumbens-revised structure for praecansone A and conformation of praecansone B, 2723-8
PREGNANE
Synthesis of ring-A and -B substituted $17 x$-acetoxypregnan-20-one derivatives with potential activity on the digitalis receptor in cardiac muscle, 1361-8
PREGNATETRAENE
Ring- $C$ aromatic steroids. Part 5. C-17 Hydroxylation and sidechain degradation of 18 -nor- $17 x(\mathrm{H})$ - and $-17 \beta(\mathrm{H})$-pregna-4,8,11,13-tetraene-3,20-dione. $X$-Ray structure of $17 \beta$-hydroxy-18-nor-17 $\beta(\mathrm{H})$-pregna-4,8,11,13-tet raene-3,20-dione, 169-72
PRELOG-DJERASSI LACTONE
An approach to the total synthesis of the Prelog-Djerassi lactone, 537-46
PROCYANIDIN
Condensed tannins. base-catalysed reactions of polymeric procyanidins with toluene-x-thiol. Lability of the interflavanoid bond and pyran ring., 465-70
Condensed tannins. Base-catalysed reactions of polymeric procyanidins with phloroglucinol: intramolecular rearrangements, 1875-82
PROFISETINIDIN
Synthesis of condensed tannins. Part 20. Cycloconformations and conformational stability among derivatives of 'angular' tetraflavanoid profisetinidins, 2353-60
PROGESTERONE
14-Methyl steroids. Part 5. Structural features influencing stereoselectivity of 14 -methylation of 15 -oxo-19-norsteroids: synthesis of $14 x$-methyl-19-norprogesterone, 1377-82
PROGUIBOURTINIDIN
Synthesis of condensed tannins. Part 18. Stilbenes as potent nucleophiles in regio- and stereo-specific condensations: novel guibourtinidol-stilbenes from Guibourtia coleosperma, 1705-12
PROLINE
Synthesis of ( $2 R, 3 S, 4 R$ )-3,4-dihydroxyproline from D-ribonolactone; an approach to the synthesis of polyfunctionalised D-amino acids from sugar lactones. $X$-Ray molecular structures of 2-azido-3,4-$O$-( $R$ )-benzylidene-2-deoxy-D-ribono-1,5-lactone, 2-azido-2-deoxy-D-ribono-1,5-lactone, and ( $2 R, 3 S, 3 R$ )-3,4-dihydroxyproline, 178592

## PROPANOIC ACID

Oxidative rearrangement of aryl ethyl ketones to alkyl 2arylpropanoates by lead(IV) acetate, 1433-6
PROPARGYL
Synthesis of allenylsilanes from propargyl carbamates, 2269-74

## PROPENE

Synthesis of 2,3,5-trihydroxyphenylprop-1-ene and its 4-chloro-, 6-chloro-, and 4,6-dichloro-derivatives, 2209-16
PROPENTDYOPENT
Propentdyopents [5-(2-oxo-2 H -pyrrol-5-ylmethylene)pyrrol-2(5 H)ones] and related compounds. Part 1. On the structure of the propentdyopent-alkanol adducts, 43944
meso-Reactivity of porphyrins and related compounds. Part 9. Photo-oxygenation of octaethyloxophlorin, 1063-8
Propentdyopents [5-(2-oxo-2 H -pyrrol-5-ylmethylene)pyrrol-2(5H)ones] and related compounds. Part 2. The $Z \rightleftarrows E$ photoisomerisation of pyrromethenone systems, 1383-8
PROPIONIC ACID
Thallium(III) nitrate-mediated efficient synthesis of 2 -arylpropionic acids from 1-halogenoethyl aryl ketones, 1255-8
PROPIOPHENONE
Oxidative rearrangement of aryl ethyl ketones to alkyl 2arylpropanoates by lead(IV) acetate, 1433-6

## PROPYNYL

Synthesis of allenylsilanes from propargyl carbamates, 2269-74

## PROSTACYCLIN

The synthesis of heteroaromatic prostacyclin analogues via keto alkyne cyclisation, 1825-32
PROSTAGLANDIN
Total synthesis and $X$-ray crystal structure of 13,14-didehydro-11-deoxy-11-methyl-15-oxoprostaglandin $\mathrm{E}_{1}, 1485-8$

## PROSTANOID

Thromboxane $A_{2}$ analogues from 8-oxabicyclo[3.2.1]oct-6-en-3ones, 1657-66

## PROTECTING GROUP

The allyl group for protection in carbohydrate chemistry. Part 18. Allyl and benzyl ethers of myo-inositol. Intermediates for the synthesis of myo-inositol trisphosphates, 423-30
PROTECTION OF STEROID SIDE-CHAIN
18-Substituted steroids. Part 13. Improved preparation of the metabolites of aldosterone reduced in ring A., 1343-6
PROTEIN KINASE SUBSTRATE
Synthesis of substrates of cyclic AMP-dependent protein kinase and use of their protected precursors for the convenient preparation of phosphoserine peptides, 529-36
PROTOBERBERINE
Chemical transformation of protoberberines. Part 10. A novel synthesis of sanguilutine and dihydrosanguilutine, fully aromatised 2,3,7,8,10-pentaoxygenated benzo[ $c$ ]phenanthridine alkaloids, 677-82
PROTONATION
Structural studies on bio-active compounds. Part 6. Determination of the sites of protonation on three 2,4-diaminopyrimidines of pharmaceutical importance by proton-coupled ${ }^{15} \mathrm{C}$ and ${ }^{1} \mathrm{H}$ nuclear magnetic resonance spectroscopy, 2229-34
PROTOPORPHYRIN
Synthetic and biosynthetic studies of porphyrins. Part 7. The action of coproporphyrinogen oxidase on coproporphyrinogen-IV: syntheses of protoporphyrin-XIII, mesoporphyrin XIII, and related tricarboxylic porphyrins, 265-76
PULSE LABELLING
Biosynthesis of porphyrins and related macrocycles. Part 28. Development of a pulse labelling method to determine the $C$ methylation sequence for vitamin $\mathrm{B}_{12} ., 1689-96$
PUMMERER REARRANGEMENT
Carbon-carbon bond forming reactions via $x$-phosphoryl- $x$-thio carbocations, 1095-8
Alkene cyclisations of $N$-alkenyl-x-(methylsulphinyl)acetamides and $N$-alkenyl- $x$-chloro-x-(methylthio)acetamides: novel synthesis of five-, six-, and seven-membered lactams, 1099-106

## PURINE

The chemistry of nitrilium salts. Part 4. Some reactions of 5-amino-4-( $C$-cyanoformimidoyl)imidazoles obtained from nitrilium trifluoromethanesulphonate salts and diaminomaleonitrile, 15216
PUTRESCINE
Application of ${ }^{2} \mathrm{H}$ n.m.r. spectroscopy to study the incorporation of enantiometric $\left[2-^{2} \mathbf{H}\right]$-labelled putrescines into the pyrrolizidine alkaloid retrorsine, 1089-94

## PYRAN

Ring opening of $2 H$-pyrans promoted by organometallic reagents. Synthesis of dienic alcohols, 2125-8
The 3,4-dihydro-2 $H$-pyran approach to $(+)$-milbemycin $\beta_{3}$. Part 1. An alternative synthesis of $(2 S, 4 S, 6 R, 8 R, 9 S)$-2-formylmethyl-4-(dimethyl-t-butylsilyloxy)-8,9-dimethyl-1,7dioxaspiro[5.5]undecane, 2183-8
The 3,4-dihydro- 2 H -pyran approach to $(+)$-milbemycin $\beta_{3}$. Part 2. An improved synthesis of $(2 R, 4 S, 6 S, 8 R, 9 S)-2-[(5 R)-(2 E)-3-$ methyl-5-formyl-hex-2-en-1-yl]-8,9-dimethyl-4-(dimethyl-t-butylsilyloxy)-1,7-dioxaspiro[5,5]undecane, 2189-94
PYRANOBENZOPYRAN
Studies on the syntheses of heterocyclic compounds containing benzopyrone. Part 6. Biomimetic total synthesis of citromycetin, 395-8
PYRANOBENZOPYRANONE
Studies on the syntheses of heterocyclic compounds containing benzopyrone. Part 5. Total synthesis of fulvic acid, 389 94
PYRANONE
Preparation of a chiral lactone from laevoglucosan; a key intermediate for synthesis of the spiroacetal moieties of the avermectins and milbemycins, 1613-22

## PYRANOSIDE

Nuclear magnetic resonance and conformational studies on monoacetylated methyl D-gluco-and D-galacto-pyranosides, 377-84

## PYRAZINE

Preparation of stable 1,4-dihydropyrazines, 1841-4
PYRAZOLE
Polarised ketene dithioacetals. Part 50. Reactions of $x$-aroyl- $x-$ bromoketene dithioacetals with hydrazine hydrate: formation of rearranged pyrazoles, 1945-50
Reaction of azoles with ethyl bromopyruvate oxime: alkylation by substitution and by elimination-addition, 2235-40
Total synthesis of analogues of the $\beta$-lactam antibiotics. Part 3. 2Ethoxycarbonyl derivatives of carbapen-1-em-3-exo-carboxylates and carbapenam-3-exo-carboxylates, 2361-70
PYRAZOLIDINE
Regioselectivity in the photochemical ring contraction of 4-diazopyrazolidine-3,5-diones to give aza- $\beta$-lactams, 885 98
PYRENE
Metacyclophanes and related compounds. Part 16. Preparation of 8 -fluoro-t-butyl[2.2]metacyclophanes and their treatment with aluminium chloride-nitromethane in benzene, 1-8
PYRETHROID
Chiral route to cis-caronaldehyde from D-mannitol, 91-8
PYRIDAZINE
Intramolecular cycloaddition of azoalkenes derived from terminal alkenoic and alkynoic acids, 2511-6
Formation of pyridazino[6,1-c][1,4]oxazin-8(7H)-ones by intramolecular cycloaddition of azoalkenes, 2517-22
PYRIDAZINO-OXAZINE
Formation of pyridazino[6,1-c][1,4]oxazin-8(7H)-ones by intramolecular cycloaddition of azoalkenes, 2517-22

## PYRIDINE

The Hantzsch synthesis with salicylaldehyde revised., 563-6
Reaction of dimethylvinylidene carbene with methylpyrroles, 134752
Trifluoromethanethiolate ion. Part 2. Nucleophilic substitution in pentafluoropyridine. Synthesis and characteristics of trifluoromethylthio and trifluoromethylsulphonyl derivatives, 2119-24
Formation of 2-acetylpyridines by the base-catalysed ring opening of dihydro- 4 H -furo[2,3-e]oxazines, 2505-10
PYRIDINETHIONE
Photochemical reactions of pyridine-4-thiones and acridine-9thiones with alkenes, $1225-8$
PYRIDINIUM METHYLIDE
The synthesis of diethyl p-tolylsulphonylethynylphosphonate and related acetylenes, and their reactions with nucleophiles, pyridinium-1-dicyanomethylides, and dienes, 1275-82
PYRIDINOPHANE
Synthesis of [6](2,4)pyridinophanes, 2829-32
PYRIDOACRIDINE
Vinyl azides in heterocyclic synthesis. Part 7. Synthetic studies on the cytotoxic marine alkaloid amphimedine, 927-30
PYRIDOPYRIDAZINE
Intramolecular cycloaddition of azoalkenes derived from terminal alkenoic and alkynoic acids, 2511-6
PYRIMIDINE
Synthesis of heterocycles via enamines. Part 12. Intramolecular additions of nucleophiles to 1,4-dihydropyrimidine-2(3H)-thione derivatives: single-step synthesis of condensed heterocyclic compounds, 261-4
Structural studies on bio-active compounds. Part 5. Synthesis and properties of 2,4-diaminopyrimidine dihydrofolate reductase inhibitors bearing lipophilic azido groups, 2217-28
Structural studies on bio-active compounds. Part 6. Determination of the sites of protonation on three 2,4-diaminopyrimidines of pharmaceutical importance by proton-coupled ${ }^{15} \mathrm{C}$ and ${ }^{1} \mathrm{H}$ nuclear magnetic resonance spectroscopy, 2229-34
Photochemical reactions of pyrimidinethiones with alkenes, 252330
PYRIMIDINETHIONE
Photochemical reactions of pyrimidinethiones with alkenes, 252330
PYRIMIDONE
Stereochemical studies. Part 103. Saturated heterocycles Part 107. Preparation of 3-mono- and 2,3-di-substituted pyrimidin-4( $3 H$ )ones in retro-Diels-Alder reactions. The correct 1,2-disubstituted

PYRIMIDONE (contd)
structure of the compounds previously described as 2,3-
disubstituted derivatives, 237-40
Azafluorenes containing two bridgehead nitrogen atoms, 2585-92
PYROLYSIS
Synthesis of pyrrolo[1,2-c]imidazol-5-one, pyrrolo[1,2-a]imidazol-5one and pyrrolo [1,2-b] pyrazol-6-one (three isomeric azapyrrolizinones), by pyrolysis of Meldrum's acid derivatives, 653-6
Gas phase rearrangement reactions of 2-(arylamino)phenylaminyl radicals, 1407-12
PYROPHOSPHATE
Facile and stereospecific synthesis of $(S)$ - and $(R)$ - $\left[2-{ }^{2} \mathrm{H}\right]$ isopentenyl pyrophosphates, 2845-8
PYRROLE
Propentdyopents [5-(2-oxo-2H-pyrrol-5-ylmethylene)pyrrol-2(5H)ones] and related compounds. Part 1. On the structure of the propentdyopent-alkanol adducts, 439-44
Reaction of dimethylvinylidene carbene with methylpyrroles, 134752
Pyrrole studies. Part 35. Aerial oxidation of 4-substituted 3-amino-2,5-dimethylpyrroles. An $X$-ray crystallographic and spectroscopic study of the oxidation products, 1959-62
Biosynthesis of porphyrins and related macrocycles. Part 29.
Synthesis and chemistry of 2,2-disubstituted 2 H -pyrroles
(pyrrolenines), 2027-48
PYRROLIDINE
Bromination of certain aryl substituted pyrrolidines, 1049-52
Alkene cyclisations of $N$-alkenyl-x-(methylsulphinyl)acetamides and $N$-alkenyl- $x$-chloro- $x$-(methylthio)acetamides: novel synthesis of five-. six-, and seven-membered lactams, 1099-106
Oxidation of $N$-acyl-pyrrolidines and -piperidines with iron(iI)hydrogen peroxide and an iron complex-molecular oxygen, 1259-62
$\mathrm{X}=\mathrm{Y}-\mathrm{ZH}$ Systems as potential 1,3-dipoles. Part 7. Stereochemistry of the cycloaddition of imines of $x$-amino acid esters to fumarate and maleate esters, 2275-84
$\mathrm{X}=\mathrm{Y}-\mathrm{ZH}$ Systems as potential 1,3-dipoles. Part 8. Pyrrolidines and $\Delta^{5}$-pyrrolines (3,7-diazabicyclo[3.3.0]octenes) from the reaction of imines of $x$-amino acids and their esters with cyclic dipolarophiles. Mechanism of racemisation of $x$-amino acids and their esters in the presence of aldehydes, 2285-96
A new route to chiral hydroxypyrrolidines from D-erythrose via intramolecular 1,3-cycloaddition, 2371-6
Enantiospecific synthesis of $(+)$-retronecine, $(+)$-crotonecine, and related alkaloids, 2377-84
PYRROLIDINOXYL
Synthesis of new 2-mono- and 2,5-di-functionalized pyrrolidin-1oxyl spin labels, 1117-22
PYRROLIDINYLBENZYL ALCOHOL
Asymmetric synthesis of optically active threo- and erythropyrrolidinylbenzyl alcohol by the highly stereospecific arylation of ( $S$ )-proline and the subsequent highly diastereoselective reduction of the $x$-amino ketone, 1465-72
PYRROLINE
$\mathrm{X}=\mathrm{Y}-\mathrm{ZH}$ Systems as potential 1,3-dipoles. Part 8. Pyrrolidines and $\Delta^{5}$-pyrrolines (3,7-diazabicyclo [3.3.0]octenes) from the reaction of imines of $x$-amino acids and their esters with cyclic dipolarophiles. Mechanism of racemisation of $x$-amino acids and their esters in the presence of aldehydes, 2285-96
PYRROLIZIDINE
Studies on pyrrolizidines and related compounds. Part 9. Rearrangement of 7a-trichloromethyl-2,3,5,6,7,7a-hexahydro- 1 H pyrrolizine and related compounds: an alternative route to 5 substituted 1-azabicyclo[3.3.1]nonanes, 313-6
Application of ${ }^{2} \mathrm{H}$ n.m.r. spectroscopy to study the incorporation of enantiometric [ $2-{ }^{2} \mathrm{H}$ ]-labelled putrescines into the pyrrolizidine alkaloid retrorsine, 1089-94
Pyrrolizidine alkaloid analogues. Synthesis of 10 -membered macrocyclic diesters of $( \pm)$-synthanecine A. $X$-Ray molecular structure of ( $\pm$ )-6,7-O,O-(succinyl)synthanecine A, 2069-72
Pyrrolizidine alkaloids. Stereochemistry of the enzymic processes involved in the biosynthesis of rosmarinecine., 2195-202
PYRROLIZIDINE ALKALOID
Pyrrolizidine alkaloid biosynthesis. Incorporation of ${ }^{13} \mathrm{C}$-labelled precursors into rosmarinine, 177-80
1,2-Asymmetric induction in intramolecular Michael reaction. A novel and enantioselective route to $(+)$-Geissman lactone, 993 1004

## PYRROLIZINE

Studies on pyrrolizidines and related compounds. Part 9. Rearrangement of 7a-trichloromethyl-2,3,5,6,7,7a-hexahydro-1 H pyrrolizine and related compounds: an alternative route to 5 substituted 1-azabicyclo [3.3.1]nonanes, 313-6

## PYRROLIZINONE

An analysis of the n.m.r. spectra $\left({ }^{1} \mathrm{H},{ }^{13} \mathrm{C}\right.$, and, in part ${ }^{15} \mathrm{~N}$ and ${ }^{17} \mathrm{O}$ ) of pyrrolizin-3-one, and of its aza-derivatives pyrrolo [1,2$c$ imidazol-5-one, pyrrolo [1,2-a]imidazol-5-one and pyrrolo[1,2b] pyrazol-6-one, 657-60
PYRROLOBENZOTHIAZINE
Synthesis of pyrrolo[2,1-c][1,4] benzothiazines by annellation of 3-alkoxycarbonylmethylene- $4 H$-1,4-benzothiazines ( $\beta$-enamine esters) with dimethyl acetylenedicarboxylate, 1027-32
PYRROLOBENZOXAZINE
Total synthesis of heptacyclic Aspidosperma alkaloids. Part 1. Preliminary experiments, 2079-90
PYRROLOIMIDAZOLONE
Synthesis of pyrrolo [1,2-c]imidazol-5-one, pyrrolo[1,2-a]imidazol-5one and pyrrolo[1,2- $b$ ]pyrazol-6-one (three isomeric azapyrrolizinones), by pyrolysis of Meldrum's acid derivatives, 653-6
An analysis of the n.m.r. spectra ( ${ }^{1} \mathrm{H},{ }^{13} \mathrm{C}$, and, in part ${ }^{15} \mathrm{~N}$ and ${ }^{17} \mathrm{O}$ ) of pyrrolizin-3-one, and of its aza-derivatives pyrrolo[1,2-c]imidazol-5-one, pyrrolo[1,2-a]imidazol-5-one and pyrrolo[1,2-b]pyrazol-6-one, 657-60
PYRROLOINDOLE
Vinyl azides in heterocyclic synthesis. Part 8. Synthesis of the naturally occurring phosphodiesterase inhibitors PDE-I and PDE-II, 931-6
Intramolecular 1,3-dipolar cycloaddition of alkyl azidoalkylidenemalonate and 1,3-dipolar cycloreversion of the triazoline intermediate: synthesis and reactions of an N -sulphonyl-2,4-dihydropyrrolo[3,4-b]indole, 977-80
PYRROLOPURINE
Reactions of xanthinium $N(7)$-ylides with olefinic dipolarophiles, 1211-20
PYRROLOPYRAZOLONE
Synthesis of pyrrolo[1,2-c]imidazol-5-one, pyrrolo[1,2-a]imidazol-5one and pyrrolo[1,2-b] pyrazol-6-one (three isomeric azapyrrolizinones), by pyrolysis of Meldrum's acid derivatives, 653-6
An analysis of the n.m.r. spectra $\left({ }^{1} \mathrm{H},{ }^{13} \mathrm{C}\right.$, and, in part ${ }^{15} \mathrm{~N}$ and ${ }^{17} \mathrm{O}$ ) of pyrrolizin-3-one, and of its aza-derivatives pyrrolo[1,2$c$ ]imidazol-5-one, pyrrolo[1,2-a]imidazol-5-one and pyrrolo [1,2-b]pyrazol-6-one, 657-60
PYRROLOPYRROLOINDOLE
Synthesis of some hexahydroazocino $[4,3-b]$ indoles, a tetra- and two hexahydropyrrolo $\left[1^{\prime}, 2^{\prime}: 1,2\right]$ pyrrolo $[3,4-b]$ indoles, and a tetrahydropyrrolo $\left[2^{\prime}, 1^{\prime}: 5,1\right]$ imidazo $\left.3,4-a\right]$ indole. Crystal structure determination of 1,2,3,4-tetrahydro-2-phenoxycarbonyl-7-phenylsulphonylazocino[4,3-b]indol-6( $5 H$ )-one, 1599606
PYRROLYLMETHYLPHOSPHONATE
Di-heteroarylethylenes: synthesis and donor properties, 2631-6
PYRROMETHENONE
Propentdyopents [5-(2-oxo-2H-pyrrol-5-ylmethylene)pyrrol-2(5H)ones] and related compounds. Part 2 . The $Z \rightleftarrows E$ photoisomerisation of pyrromethenone systems, 1383-8
QUANTUM CHEMICAL CALCULATION
2-Chloro-3,4-dihydroimidazole. Part 2. Synthesis of cyanines from 6-aryl-2,3-dihydro-6a H -imidazo[1,2-a]pyrido[1,2-c][1,3,5]triazin$5(6 H)$-ones. Crystal and molecular structure of 6-phenyl-2,3-dihydro-6a $H$-imidazo [1,2-a]pyrido [1,2-c][1,3,5]triazin-5(6H)-one, 1033-8
QUANTUM YIELD
Photochemistry of organo-halogenic moiecules. Part 20. The effect of cycloalkene structure on the $[2+2]$ photocycloaddition to hexafluorobenzene, 981-6
QUATERPHENYL
Synthesis of substituted dibenzophospholes. Part 6. Preparation of symmetrical and non-symmetrical quaterphenyl intermediates, 859-66

## QUINAZOLINONE

Asymmetric induction in addition of $N$-nitrenes to alkenes: oxidation of 3-amino-2-(1,2,2-trimethylpropyl)quinazolin-4(3H)one in the presence of $x$-methylene- $\gamma$-butyrolactone: conformational analysis of the aziridines formed and comparison with alkanoylated cyclopropylamines, 2797-802

## QUINAZOLINONE (contd)

Chiral aziridination of $\alpha, \beta$-unsaturated esters and ketones using $N$ nitrenes in the presence of trifluoroacetic acid, 2803-8
QUINAZOLONE
Intramolecular reactions of $N$-nitrenes: description of the transition state geometry for addition to alkenes, 113546
QUINOL ENOL ETHER
Synthesis of $4^{\prime}-O$-methyl- and $4^{\prime}, 6-\mathrm{di}-O$-methyl-chalaurenol, 27836
QUINOLIZIDINE
Application of ${ }^{2} \mathrm{H}$ n.m.r. spectroscopy to study the incorporation of enantiomeric ${ }^{2} \mathrm{H}$-labelled cadaverines into quinolizidine alkaloids, 105-10
QUINOLIZINE
Stereocontrolled construction of octahydroquinolizines, octahydroindolizines, hexahydrobenzo[a]quinolizines, and an octahydroindolo[2,3-a]quinolizine by an intromolecular double Michael reaction: synthesis of $( \pm)$-epilupinine, 1719-26
QUINONE
Ketene $S, N$-acetals as synthetic intermediates for heterocycles. Reaction of ketene $S, N$-acetals with 1,4-quinones, 1501-4
Synthesis of bipyridyl-, viologen-, and quinone-bridged porphyrins, 2385-94
Dienone-phenol rearrangement of naphthalenetriones. A route to 10-acetoxy- $5,6,7,8$-tetrahydrophenanthrene-1,4-diones, 2855
QUINOXALINE
$o$-Nitrobenzylidene compounds. Part 4. The cyanide-induced cyclisation of $o$-acetamido- $N$-( $o$-nitrobenzylidene)anilines: an improved route to quinoxalino [2,3-c]cinnolines, 501-6
QUINOXALINOCINNOLINE
$o$-Nitrobenzylidene compounds. Part 4. The cyanide-induced cyclisation of $o$-acetamido- $N$-( $o$-nitrobenzylidene)anilines: an improved route to quinoxalino[2,3-c]cinnolines, 501-6
Polyaza heterocycles. Part 1. Halogenation of quinoxalino[2,3c] ]cinnolines by hydrogen halides, 507-14

## QUINOXALINONE

Photocycloaddition of quinoxalin-2-ones and benzoxazin-2-ones to aryl alkenes, 2611-6
RABDOSIA UMBROSA
Structural elucidation of new diterpenoids isolated from Rabdosia umbrosa var. leucantha f. Kameba, 2403-10
RACEMISATION
$\mathrm{X}=\mathrm{Y}-\mathrm{ZH}$ Systems as potential 1,3-dipoles. Part 8. Pyrrolidines and $\Delta^{5}$-pyrrolines (3,7-diazabicyclo[3.3.0]octenes) from the reaction of imines of $x$-amino acids and their esters with cyclic dipolarophiles. Mechanism of racemisation of $\alpha$-amino acids and their esters in the presence of aldehydes, 2285-96

## RADICAL

Intramolecular functionalization of $N$-cyanamide radicals: synthesis of 1,4-and $1,5-N$-cyanoepimino compounds, 937-44
Reactions of carboxylic acid derivatives with superoxide, 945-8
Gas phase rearrangement reactions of 2-(arylamino)phenylaminyl radicals, 1407-12
Ruthenium(II)- and rhenium(iII)-catalysed addition of tetrahalogenomethanes to alkenes and $1, \omega$-dienes. Stereoselective formation of cis-1,2-disubstituted cyclopentanes from 1,6-dienes, 1515-20
RADICAL ADDITION ELIMINATION
1,3-Rearrangements of some allylic sulphones, 2707-14
RADICAL ANION
Radical-nucleophilic substitution ( $S_{\text {RN }} 1$ ) reactions. Part 5. Anions of nitroimidazoles in $S_{\mathrm{RN}} 1$ and oxidative addition reactions, 281928
RADICAL-NUCLEOPHILIC SUBSTITUTION
Radical-nucleophilic substitution ( $S_{\mathrm{RN}} 1$ ) reactions. Part 5. Anions of nitroimidazoles in $S_{\mathrm{RN}} 1$ and oxidative addition reactions, 281928

## RADICAL TRAPPING

The chemistry of pentavalent organobismuth reagents. Part 7. The possible role of radical mechanisms in the phenylation process for bismuth(v), and related lead(IV), iodine(iII), and antimony(v) reagents, 241-50
RANITIDINE
Isolation and identification of the hydrolytic degradation products of ranitidine hydrochloride, 951-4
REDUCTION
Synthesis of C-19-chiral steroids. Preparation of (19R); (19S) and (19RS)-3 $\beta$-hydroxy $\left[19-{ }^{2} \mathbf{H}_{1}, 19-{ }^{3} \mathbf{H}_{1}\right]$ androst-5-en-17-ones, 61-70

Reduction and stereochemical studies through n.m.r. and $X$-ray techniques of indolo $[2,1-b]$ quinazolines, $519-28$
The preparation and absolute configuration of the optically active forms of the diastereoisomers of 2-(1-phenylethyl)amino-1phenylethanol and their use as chiral auxiliaries in the asymmetric reduction of acetophenone with modified lithium aluminium hydrides, 601-6
Lewis acid-promoted conjugate reduction of $\alpha, \beta$-unsaturated carbonyl compounds by 2 -phenylbenzothiazoline (2-phenyl-2,3dihydrobenzothiazole), 699-706
Asymmetric synthesis of optically active threo- and erythropyrrolidinylbenzyl alcohol by the highly stereospecific arylation of ( $S$ )-proline and the subsequent highly diastereoselective reduction of the $\alpha$-amino ketone, 1465-72
Lithium aluminium hydride reduction of chiral benzoylformamides derived from chiral amino alcohols, 1495-500
Production of ( $R$ )-1-(1,3-dithian-2-yl)propan-2-ol by microbial reduction, 1607-8
Neighbouring group participation in the reduction of the diterpenoid fujenal, 1987-90
Studies on the stereochemical control of fermenting baker's yeast mediated reductions: some 3- and 4-oxo esters, 2753-8
REDUCTIVE AMINATION
The allyl group for protection in carbohydrate chemistry. Part 19. The coupling of allyl 2,3 -di- $O$-methyl-4-O-(3,6-di-O-methyl- $\beta$-d-glucopyranosyl)-x-L-rhamnopyranoside to bovine serum albumin. Preparation of a diagnostic reagent for antibodies to the major glycolipid of Mycobacterium leprae (the leprosy bacillus) in human sera, 1165-70
REGIOCONTROL
A regiocontrolled synthesis of allylstannanes, 2259-64
REGIOSELECTIVE METHANOLYSIS
Acid-catalysed coupling reactions and conversions of isoflavone epoxides, 1081-8
REGIOSELECTIVE RING-OPENING
Regioselective Ring-opening and demerization of methyl 3,3dimethylcyclopropenecarboxylate, 2109-10

## REGIOSPECIFIC ARYLATION

Acid-catalysed coupling reactions and conversions of isoflavone epoxides, 1081-8
RENIN SUBSTRATE
Renin substrates. Part 2. Rapid solid phase synthesis of the ratine sequence tetradecapeptide using BOP reagent, 1915-20
RESOLUTION
Synthesis of substituted dibenzophospholes. Part 8. Synthesis and resolution of atropisomers of a 4,6-diaryldibenzophosphole, 8716
RETRONECINE
Enantiospecific synthesis of $(+)$-retronecine, $(+)$-crotonecine, and related alkaloids, 2377-84

## RETRORSINE

Application of ${ }^{2} \mathrm{H}$ n.m.r. spectroscopy to study the incorporation of enantiometric [ $\left.2-{ }^{2} \mathrm{H}\right]$-labelled putrescines into the pyrrolizidine alkaloid retrorsine, 1089-94
RHAZYA STRICTA
Aspidospermidose: a new dihydroindole alkaloid from the leaves of Rhazya stricta, 1701-4
RHIZOPUS NIGRICANS
Microbial transformations of sesquiterpenoids: conversion of deoxyvulgarin by Rhizopus nigricans and Aspergillus ochraceous, 471-4

## RHODIUM CARBENOID

Rhodium carbenoid mediated cyclisations. Synthesis of 1,2diazetidinones (aza- $\beta$-lactams), 899-902
RIBONOLACTONE
Synthesis of ( $2 R, 3 S, 4 R$ )-3,4-dihydroxyproline from D-ribonolactone; an approach to the synthesis of polyfunctionalised D -amino acids from sugar lactones. $X$-Ray molecular structures of 2-azido-3,4$O$ - $(R)$-benzylidene-2-deoxy-D-ribono-1,5-lactone, 2-azido-2-deoxy-D-ribono-1,5-lactone, and ( $2 R, 3 S, 3 R$ )-3,4-dihydroxyproline, 178592

## RIBONUCLEOSIDE

Ribonucleoside cyclic $3^{\prime}, 5^{\prime}$-phosphoramidates: synthesis,
stereochemistry, and conversion into ribonucleoside cyclic $3^{\prime}, 5^{\prime}$ phosphorothioates and $-\left[{ }^{18} \mathrm{O}\right]$ phosphates, 1645-56

## RIBOSIDE

The conversion of the $2^{\prime}, 3^{\prime}-O$-isopropylidene derivative of 5 -amino-$1-\beta$-D-ribofuranosylimidazole-4-carboxamide (AICA riboside) into $2^{\prime}, 3^{\prime}-O$-isopropylidene-isoguanosine, 1527-32

## RING CONTRACTION

Organic heterocyclothiazenes. Part 4. Chemistry of 1,3,5,2,4trithiadiazepines, 217-24
RING CURRENT
Syntheses and properties of dicyanodimethyltetradehydro-trideca-, -pentadeca-, -heptadeca-, and -nonadeca-annulenes, and benzannelated tridecafulvene derivatives, 1505-10
RING ENLARGEMENT
A three-step procedure for the conversion of $\gamma$-lactones into $\delta$ lactones, 2469-72
RING EXPANSION
Hexahydro-1,4-oxazepines. Part 1. Synthesis by morpholine ring expansion, 553-6
ROSMARINECINE
Pyrrolizidine alkaloids. Stereochemistry of the enzymic processes involved in the biosynthesis of rosmarinecine., 2195-202

## ROSMARININE

Pyrrolizidine alkaloid biosynthesis. Incorporation of ${ }^{13} \mathrm{C}$-labelled precursors into rosmarinine, 177-80
Pyrrolizidine alkaloids. Stereochemistry of the enzymic processes involved in the biosynthesis of rosmarinecine., 2195-202

## SACCHARIDE

Synthesis of oligosaccharides corresponding to biological repeating units of Shigella flexneri variant Y polysaccharide. Part 1. Overall strategy, synthesis of a key trisaccharide intermediate, and synthesis of a pentasaccharide, 9-14
Nuclear magnetic resonance and conformational studies on monoacetylated methyl D-gluco-and D-galacto-pyranosides, 377-84
SACCHAROMYCES CEREVISIAE
Biohydrogenation of unsaturated compounds by Saccharomyces cerevisiae. Part 1. Stereochemical aspects of the reaction and preparation of useful bifunctional chiral synthons, 17438
Biohydrogenation of unsaturated compounds by Saccharomyces cerevisiae. Part 2. ( $S$ )-( - -ethyl 4-hydroxy-3-methylbutanoate as a chiral synthon for the preparation of ( $25 S$ )-26hydroxycholesterol, 1749-52
SALICYLALDEHYDE
The Hantzsch synthesis with salicylaldehyde revised., 563-6
SANDMEYER REACTION
Diazotization and Sandmeyer reactions of arylamines in poly(ethylene glycol)-methylene dichloride: usefulness of PEG in synthetic reactions, 645-8
SANGUILUTINE
Chemical transformation of protoberberines. Part 10. A novel synthesis of sanguilutine and dihydrosanguilutine, fully aromatised 2,3,7,8,10-pentaoxygenated benzo[ $c$ ]phenanthridine alkaloids, 677-82
SANTONIN
Synthesis of some tetrahydrosantonin derivatives with functionalised angular substituents based on remote oxidation, 1793-8
Transformation of santonin into ( + )-deoxyvernolepin and related dilactones, 2833-8
SAXIFRAGIFOLIN
New triterpenoid pentasaccharides from Androsace saxifragifolia, 1963-8
SCHIFF BASE
Synthesis of 6,7-dihydro-5H-1,2,4-triazolo $[3,4-b][1,3,4]$ thiadiazines by a C-C ring cyclization under mild conditions, 1853-60
SELENIUM
Aspidosperma alkaloids. Conversion of tabersonine into vindoline, 155-62
Electrophilic addition of benzeneselenenyl chloride to alkenes bearing an electron-withdrawing substituent, 1059-62
Novel heterocyclic systems. Part 28. Preparation and characterization of the $1,6-, 1,7-, 1,8$ - and $1,9-$ diazaphenoxaselenines: an unexpected divergence between closely related sulphur and selenium systems, 2839-44

## SENECIO ISATIDEUS

Application of ${ }^{2} \mathrm{H}$ n.m.r. spectroscopy to study the incorporation of enantiometric $\left[2-^{2} \mathrm{H}\right]$-labelled putrescines into the pyrrolizidine alkaloid retrorsine, 1089-94
SENECIO PLEISTOCEPHALUS
Pyrrolizidine alkaloid biosynthesis. Incorporation of ${ }^{13} \mathrm{C}$-labelled precursors into rosmarinine, 177-80
'SEP-PAK' ABSORBENT
18-Substituted steroids. Part 12. Synthesis of aldosterone 21-
sulphate, and an improved general procedure for preparing steroid sulphates, $1339-42$
SERINE HYDROXYMETHYLTRANSFERASE
Structural studies on bioactive compounds. Part 7. The design and synthesis of $\alpha$-substituted serines as prospective inhibitors of serine hydroxymethyltransferase., 2617-24

## SESQUITERPENE

Microbial transformations of sesquiterpenoids: conversion of deoxyvulgarin by Rhizopus nigricans and Aspergillus ochraceous, 471-4
Configuration of 1,10 -epoxyguaianolides: stereochemistry of $1,10-$ epoxy-8 $\alpha$-hydroxyachillin, 1641-4
SHARPLESS OXIDATION
Facile and stereospecific synthesis of $(S)$ - and $(R)-\left[2-{ }^{2} \mathrm{H}\right]$ isopentenyl pyrophosphates, 2845-8
SHIGELLA FLEXNERI
Synthesis of oligosaccharides corresponding to biological repeating units of Shigella flexneri variant Y polysaccharide. Part 1. Overall strategy, synthesis of a key trisaccharide intermediate, and synthesis of a pentasaccharide, 9-14
SHIKIMATE PATHWAY
The shikimate pathway. Part 7. Chorismate mutase: towards an enzyme model, 2765-74
SIAMINE
Vinyl azides in heterocyclic synthesis. Part 9. Synthesis of the isoquinolone alkaloid siamine by intramolecular aza-Wittig reaction, 1395-8
SIGMATROPIC REACTION
Application of a tandem electrocyclic [3,3]sigmatropic reaction of $o$-quinodimethane to the synthesis of Calabar bean alkaloids. Part 2. First total synthesis of ( $\pm$ )-geneserine, 2491-6
SIGMATROPIC REARRANGEMENT
Selective ortho-alkylation of phenols with sulphoxides via $[2,3]$ sigmatropic rearrangement: synthesis of coumarins, 1753-6

## SIGMATROPIC SHIFT

Rearrangement of some allylic sulphinate esters to allylic sulphones. Ion-pair and sigmatropic shift mechanisms, 2149-52
Use of the diazoalkane-thione reaction in the synthesis of a vinyltrimethylenemethane precursor, 2497-504
SILANE
Reaction of [arylthio(chloro)methyl]trimethylsilanes with arenes and alk-1-enes in the presence of Lewis acid: syntheses of [aryl(arylthio)methyl]- and (1-arylthioalk-3-enyl)trimethylsilanes, 589-94
Synthesis of allenylsilanes from propargyl carbamates, 2269-74
Chemistry of silylated thioketones. Part 2. Cycloaddition reactions with 1,3-dienes, 2643-6
Chemistry of silylated thioketones. Part 2. Cycloaddition reactions with 1,3-dienes, 2643-6
Chemistry of silyl thioketones. Part 3. Cycloaddition reactions with heterodienes ( $x$-nitrosostyrene and ketene imines), 2647-52

## SILPHINENE

Stereoselective total synthesis of $( \pm)$-3-oxosilphinene through intramolecular Diels-Alder reaction, 1331-8

## SILVATHIONE

Studies on fungal products. Part 13. Isolation and structures of dithiosilvatin and silvathione, novel dioxopiperazine derivatives from Aspergillus silvaticus, 2099-102

## SILYLATED ENOLATE

Regiochemical control in the alkylation of tetrahydroindanones, 759-62

## SILYL CARBANION

Stereoselective synthesis of trans-2-aryl-3-(2-pyridyl)aziridines from an $x$-silyl carbanion, 1489-94

## SILYL ENOL ETHER

Carbon-carbon bond formation using hypervalent iodine under Lewis acid conditions: scope of the method for the synthesis of butane-1,4-diones, 559-62
Hypervalent iodine oxidation of silyl enol ethers. A direct route to $\alpha$-hydroxy ketones, 1781-4

## SILYL ETHER

The reactivity of silyl ethers to the Swern reagent, 1221-4

## SINGLET-OXYGEN RING CLOSURE

Conversion of $N$-hydroxytryptophan into $x$-functionalised tryptophans. An approach to the sporidesmin series, 2481-90

## SIROHYDROCHLORIN

Synthetic studies relevant to biosynthetic research on vitamin $\mathrm{B}_{12}$. Part 4. Development of the photochemical route to isobacteriochlorins, 1667-78

## SMILES REARRANGEMENT

Novel heterocyclic systems. Part 28. Preparation and
characterization of the $1,6-1,7-1,8$ - and 1,9-
diazaphenoxaselenines: an unexpected divergence between
closely related sulphur and selenium systems, 2839-44
SOFT BASE
Hard acid and soft nucleophile systems. Part 11. Hard-soft affinity inversion: dehalogenation of $x$-halogeno ketones with aluminium chloride and a thiol, 1043-8
SOLVENT EFFECT
Photosensitized oxidation of furans. Part 12. Solvent effects in thermal rearrangement of the 2,5 -peroxides of 2,5 -unsubstituted furans, $1833-40$
SOLVOLYSIS
Autoxidation and solvolysis products of octaethylverdohaemochrome, 1183-8
SOMMELET-HAUSER
Reactions of polyfluoro-arenols and -heteroarenols with activated dimethyl sulphoxide. Facile [2,3]-sigmatropic rearrangement reactions giving de-aromatised products, 2091-8
SPIN LABEL
Synthesis of new 2-mono- and 2,5-di-functionalized pyrrolidin-1oxyl spin labels, 1117-22
SPIRO ACETAL
Isolation and synthesis of 1,7-dioxaspiro[5.5]undecane and 1,7-dioxaspiro[5.5]undecan-3- and -4-ols from the olive fly (Dacus oleae), 1123-8
SPIRO CYCLIZATION
A new spiro annellation reaction in the isoxazole series: applications and limits. Part 2. Reactivity of ethyl 4-nitro-3-phenylisoxazole-5-carboxylate with nitrogen binucleophiles, 1005-10
SPIROTHIETANE
Photochemical reactions of pyridine-4-thiones and acridine-9thiones with alkenes, 1225-8
SPONGE STEROL
Synthesis and stereochemistry of 23,24-dihydrocalysterol: implications for marine sterols of a unified biosynthetic scheme involving protonated cyclopropanes, 1283-90
Synthesis and stereochemistry of ficisterol and norficisterol: biosynthetic implications, 1291-306
Sterols in marine invertebrates. Part 57. Stereostructure, synthesis, and acid-catalysed isomerization of hebesterol-a biosynthetically significant cyclopropyl-containing marine sterol, 1307-18
SPORIDESMIN
Conversion of $N$-hydroxytryptophan into $x$-functionalised tryptophans. An approach to the sporidesmin series, 2481-90
STANNANE
A regiocontrolled synthesis of allylstannanes, 2259-64
STATINE
Stereospecific synthesis of $N$-protected statine and its analogues via chiral tetramic acid, 1177-82
STEREOCHEMICAL CONTROL
Studies on the stereochemical control of fermenting baker's yeast mediated reductions: some 3- and 4-oxo esters, 2753-8

## STEREOCHEMISTRY

Stereochemical studies. Part 103. Saturated heterocycles Part 107. Preparation of 3 -mono- and 2,3-di-substituted pyrimidin-4(3H)ones in retro-Diels-Alder reactions. The correct 1,2-disubstituted structure of the compounds previously described as $2,3-$ disubstituted derivatives, 237-40
New methods for probing the chirality of ${ }^{18} \mathrm{O}$-labelled phosphinic acids, 1813-6
The stereochemistry of some reactions at C-16 in gibberellins; an $X$-ray crystallographic study of the methyl esters of gibberellin $\mathrm{A}_{2}$ and gibberellin $\mathrm{A}_{9}$ hydrochloride, 1991-4
Pyrrolizidine alkaloids. Stereochemistry of the enzymic processes involved in the biosynthesis of rosmarinecine., 2195-202
$\mathrm{X}=\mathrm{Y}-\mathrm{ZH}$ Systems as potential 1,3-dipoles. Part 7 .
Stereochemistry of the cycloaddition of imines of $\alpha$-amino acid esters to fumarate and maleate esters, 2275-84
Structural features and crystallographic examination of 5-acetyl-and 5-trifluoroacetyl-2-( $N, N$-disubstituted amino)thiazoles, 2305-10
STEREOCONTROL
A regiocontrolled synthesis of allylstannanes, 2259-64
STEREOELECTRONIC EFFECT
Regiochemical control in the alkylation of tetrahydroindanones, 759-62

Steroids Part 22. Photochemistry of 5,6-epoxy-4,4-dimethylcholestan-3-ones and 5,6-epoxy-17-hydroxy-4,4-dimethylestran-3-ones, 2653-8

## STEREOMUTATION

Synthesis of substituted dibenzophospholes. Part 8. Synthesis and resolution of atropisomers of a 4,6-diaryldibenzophosphole, 8716

## STEREOSELECTIVITY

Chiral dienolates: formation and stereoselective $x$-alkylation of the lithium dienolate derived from $(Z)-\left[\left(\eta^{5}-\right.\right.$ $\left.\left.\mathrm{C}_{5} \mathbf{H}_{5}\right) \mathrm{Fe}(\mathrm{CO})\left(\mathrm{PPh}_{3}\right) \mathrm{COCH}=\mathrm{CHMe}\right]$. $X$-Ray crystal structure of $(R S)-(Z)-\left[\left(\eta^{5}-\mathrm{C}_{5} \mathrm{H}_{5}\right) \mathrm{Fe}(\mathrm{CO})\left(\mathrm{PPh}_{3}\right) \mathrm{COCH}=\mathrm{CHMe}\right], 489-$ 94
Stereoselective olefin formation from the dehydration of 1-( $p$ -alkoxyphenyl)-1,2-diphenylbutan-1-ols: application to the synthesis of tamoxifen, 1011-6
Reactions of xanthinium $N(7)$-ylides with olefinic dipolarophiles, 1211-20
14-Methyl steroids. Part 5. Structural features influencing stereoselectivity of 14 -methylation of 15 -oxo-19-norsteroids: synthesis of $14 \alpha$-methyl-19-norprogesterone, 1377-82
STEREOSPECIFIC
Synthesis of allenylsilanes from propargyl carbamates, 2269-74
STEREOSPECIFICITY
Facile and stereospecific synthesis of $(S)$ - and ( $R$ )-[2- $\left.{ }^{2} \mathrm{H}\right]$ isopentenyl pyrophosphates, 2845-8
STERIC ACCELERATION
Influence of ortho methyl and isopropyl substituents on the reactivity of $N$-t-butyl $P$-arylphosphonamidic chlorides with isopropylamine and t-butylamine: steric acceleration of metaphosphonimidate formation by an elimination-addition mechanism; contrasting behaviour of $N, N$-dimethyl $P$ arylphosphonamidic chlorides, 1399-406

## STEROID

14-Methyl steroids. Part 4. Synthesis of $14 \beta$-methylestradiol and related $14 \beta$-methyl-19-norsteroids, 37-44
Synthesis of C-19-chiral steroids. Preparation of (19R); (19S) and (19RS)-3 $\beta$-hydroxy $\left[19-{ }^{-} \mathbf{H}_{1}, 19-{ }^{3} \mathbf{H}_{1}\right]$ androst-5-en-17-ones, $61-70$
Ring- $C$ aromatic steroids. Part 5. C-17 Hydroxylation and sidechain degradation of 18 -nor- $17 x(\mathrm{H})$ - and $-17 \beta(\mathrm{H})$-pregna-4,8,11,13-tetraene-3,20-dione. $X$-Ray structure of $17 \beta$-hydroxy-18-nor-17 $7(\mathbf{H})$-pregna-4,8,11,13-tetraene-3,20-dione, 169-72
An approach to the construction of aromatic steroids using electrocyclic ring closure, 225-30
Formation of cyclized, including 3,5-cyclosteroid, alkenes from $\beta, \gamma$ unsaturated Grignard reagents induced by elimination of a $\delta$ alkoxy group, 475-80
Intramolecular functionalization of $N$-cyanamide radicals: synthesis of 1,4 -and $1,5-\mathrm{N}$-cyanoepimino compounds, $937-44$
The selective protection of the 3-ketone functions of steroids as heptafluoro-p-tolyl enol ethers, 1129-34
The reactivity of silyl ethers to the Swern reagent, 1221-4
Synthesis of 16 -substituted 17 -nor-13 $\alpha$-steroids and skeletal rearrangement of 17 -nor- $5 x, 13 \alpha$-androstane-16x-carbonyl $m$ chlorobenzoyl peroxide, 1247-54
18 -Substituted steroids. Part 12. Synthesis of aldosterone 21sulphate, and an improved general procedure for preparing steroid sulphates, 1339-42
18-Substituted steroids. Part 13. Improved preparation of the metabolites of aldosterone reduced in ring A., 1343-6
Synthesis of ring-A and -B substituted $17 x$-acetoxypregnan-20-one derivatives with potential activity on the digitalis receptor in cardiac muscle, 1361-8
14-Methyl steroids. Part 5. Structural features influencing stereoselectivity of 14 -methylation of 15 -oxo-19-norsteroids: synthesis of $14 \alpha$-methyl-19-norprogesterone, 1377-82
A novel stereoselective access to des- $A B$-aromatic corticosteroids via intramolecular cycloaddition reaction-potential intermediates for the synthesis of corticosteroids, 1727-34
Biohydrogenation of unsaturated compounds by Saccharomyces cerevisiae. Part 2. ( $S$ )-(-)-ethyl 4-hydroxy-3-methylbutanoate as a chiral synthon for the preparation of ( $25 S$ )-26hydroxycholesterol, 1749-52
Steroids Part 22. Photochemistry of 5,6 -epoxy-4,4-dimethylcholestan-3-ones and 5,6-epoxy-17-hydroxy-4,4-dimethylestran-3-ones, 2653-8
STEROID FUNCTIONALISATION
Alkoxycarbonylnitrenes as selective intramolecular CH -insertion reagents in alicyclic chemistry, 1553-60

## STEROL

Synthesis and stereochemistry of 23,24-dihydrocalysterol: implications for marine sterols of a unified biosynthetic scheme involving protonated cyclopropanes, 1283-90
Synthesis and stereochemistry of ficisterol and norficisterol:
biosynthetic implications, 1291-306
Sterols in marine invertebrates. Part 57. Stereostructure, synthesis, and acid-catalysed isomerization of hebesterol-a
biosynthetically significant cyclopropyl-containing marine sterol, 1307-18
STILBENE
Synthesis of condensed tannins. Part 18. Stilbenes as potent nucleophiles in regio- and stereo-specific condensations: novel guibourtinidol-stilbenes from Guibourtia coleosperma, 1705-12

## STILBENEDIOL

Enzyme-mediated $\mathrm{H}_{2} \mathrm{O}_{2}$ oxidation of $(E)$-stilbene-3,4-diol, 271922

## STOKVIS REACTION

Propentdyopents [5-(2-oxo-2 H -pyrrol-5-ylmethylene)pyrrol-2(5 H )ones] and related compounds. Part 1 . On the structure of the propentdyopent-alkanol adducts, 43944
STREPTOCOCCUS PNEUMONIAE
Synthesis of the trisaccharide component of the repeating unit of the capsular polysaccharide of Streptococcus pneumoniae Type 19F, 2745-8
STRUCTURE-ACTIVITY RELATIONSHIP
Synthesis of thiogibberellins: $X$-ray molecular and crystal structure of 19,10-thio-3-epigibberellin $\mathrm{A}_{1}, 2111-8$

## STYRENE

Chemistry of silyl thioketones. Part 3. Cycloaddition reactions with heterodienes ( $x$-nitrosostyrene and ketene imines), 2647-52

## SUBSTANCE P

${ }^{11} \mathrm{C}$-Labelling of substance $\mathbf{P}$. Preparation of a homocysteinecontaining precursor and its subsequent application in the synthesis of the labelled neuropeptide, 2241-8
SUCCINIMIDE
Synthetic studies relevant to biosynthetic research on vitamin $\mathrm{B}_{12}$. Part 5. Synthesis of ( $R S$ )-ring-b imide, 1679-88

## SUGAR $\boldsymbol{\gamma}$-LACTONE

Dichloromethylenation of sugar $\gamma$-lactones: a stereospecific synthesis of $\mathrm{L}-(+)$-muscarine and $\mathrm{L}-(+)$-epimuscarine toluene- $p$ sulphonates, 661-4

## SUGAR NITRO-OLEFIN

Studies on sugar nitro-olefins. Part 7. Synthesis of 3-(alditol-1-yl)-1,2,3,5,6,7-hexahydro- and -1,5,6,7-tetrahydro-indol-4-ones. $X$-Ray molecular structure of (3S)-3-(1,2,3,4,5-penta- $O$-acetyl-D-galacto-pentitol-1-yl)-1,2,3,5,6,7-hexahydroindol-4-one, 581-8

## SULPHENANILIDE

Thermal reactivity of $4^{\prime}$-substituted- and $4^{\prime}$-substituted-2-phenylbenzenesulphenanilides, 99-104
SULPHENYLATION
Boron trifluoride-promoted reaction of benzenesulphenanilides with alkenes in acetonitrile and benzonitrile: amidino-and amidosulphenylation of alkenes, 2815-8
SULPHIDE
Asymmetric oxidation of sulphides to sulphoxides catalysed by titanium complexes of $N$-salicylidene-L-amino acids, 71-4
The chemistry of $N$-substituted benzotriazoles. Part 1. 1(Chloromethyl)benzotriazole, 781-90
Boron trifluoride-promoted reaction of benzenesulphenanilides with alkenes in acetonitrile and benzonitrile: amidino-and amidosulphenylation of alkenes, 2815-8
SULPHONATE DISPLACEMENT
5-Thiopyranoses. Part 12. Sulphur participation in displacement reactions of sulphonate esters of 5-thio-D-allose, 5-thio-D-altrose, and 5-thio-D-glucose derivatives, 2061-8
SULPHONE
Base-promoted cyclisation of hydrazonoyl chlorides bearing an alkynylsulphonyl group, 399402
The chemistry of $N$-substituted benzotriazoles. Part 1. 1(Chloromethyl)benzotriazole, 781-90
Synthesis of enantiomerically pure 2,5 -disubstituted tetrahydrofurans using readily prepared ( $2 S$ )-1-phenylsulphonylalkan-2-ols, 1799-804
Synthesis of allyl and dienyl sulphones via iodosulphonylation of conjugated dienes, 2605-10
Preparation of some allylic sulphones; base-catalysed isomerisation and deuteriation of cyclohex-2-enyl p-tolyl sulphones, 2701-6

1,3-Rearrangements of some allylic sulphones, 2707-14 SULPHOXIDE

Asymmetric oxidation of sulphides to sulphoxides catalysed by titanium complexes of $N$-salicylidene-L-amino acids, 71-4
Stereochemistry in the Knoevenagel reaction of methyl arylsulphinylacetate and aldehydes, 825-30
Alkene cyclisations of $N$-alkenyl- $x$-(methylsulphinyl)acetamides and $N$-alkenyl- $\alpha$-chloro- $\alpha$-(methylthio)acetamides: novel synthesis of five-, six-, and seven-membered lactams, 1099-106
Selective ortho-alkylation of phenols with sulphoxides via [2,3]sigmatropic rearrangement: synthesis of coumarins, 1753-6
SULPHUR DI-IMIDE
Organic heterocyclothiazenes. Part 3. Synthesis and structure of 1,3,5,2,4-trithiadiazepines, 211-6
SULPHUR NITRIDE
Organic hererocyclothiazenes. Part 5. Cycloaddition reactions of tetrasulphur tetranitride with highly electron deficient alkynes, 2109-8

## SUPEROXIDE

Reactions of carboxylic acid derivatives with superoxide, 945-8
SURANGIN
Synthesis of the Mammea coumarins. Part 1. The coumarins of the mammea A, B, and C series, 317-32
Synthesis of the Mammea coumarins. Part 3. The insecticidal coumarins of the mammea $E$ series, mammea $D / B B$, and a dihydrocoumarin of the mammea $C$ series, 345-52
Synthesis of the Mammea coumarins. Part 4. Stereochemical and regiochemical studies, and synthesis of $(-)$-mammea $\mathrm{B} / \mathrm{BB}, 353$ 8
SWERN OXIDATION
An approach to the total synthesis of the Prelog-Djerassi lactone, 537-46
SWERN REAGENT
The reactivity of silyl ethers to the Swern reagent, 1221-4
SYNTHANECINE
Pyrrolizidine alkaloid analogues. Synthesis of 10 -membered macrocyclic diesters of $( \pm)$-synthanecine A. $X$-Ray molecular structure of ( $\pm$ )-6,7-O,O-(succinyl)synthanecine A, 2069-72

## TABEBUIA PENTAPHYLLA

A revised structure for dehydrotectol and tecomaquinone I, 1821-4
TABERSONINE
Aspidosperma alkaloids. Conversion of tabersonine into vindoline, 155-62
TAMOXIFEN
Stereoselective olefin formation from the dehydration of 1-( $p$ -alkoxyphenyl)-1,2-diphenylbutan-1-ols: application to the synthesis of tamoxifen, 1011-6
TANNIN
Condensed tannins: base-catalysed reactions of polymeric procyanidins with toluene-x-thiol. Lability of the interflavanoid bond and pyran ring., 465-70
Synthesis of condensed tannins. Part 18. Stilbenes as potent nucleophiles in regio- and stereo-specific condensations: novel guibourtinidol-stilbenes from Guibourtia coleosperma, 1705-12
Condensed tannins. Base-catalysed reactions of polymeric procyanidins with phloroglucinol: intramolecular rearrangements, 1875-82
Synthesis of condensed tannins. Part 19. Phenol oxidative coupling of $(+)$-catechin and $(+)$-mesquitol. Conformation of bis $(+)$ catechins, 2345-52
Synthesis of condensed tannins. Part 20. Cycloconformations and conformational stability among derivatives of 'angular' tetraflavanoid profisetinidins, 2353-60

## T-BUTYLDIMETHYLSILYL ETHER

18-Substituted steroids. Part 13. Improved preparation of the metabolites of aldosterone reduced in ring A., 1343-6

## TECOMAQUINONE

A revised structure for dehydrotectol and tecomaquinone I, 1821-4 TEPHROSIA PROCUMBENS

Flavonoids of Tephrosia procumbens-revised structure for praecansone A and conformation of praecansone B, 2723-8
TERPENE
Studies in the chemical constituents of Azadirachta indica A. Juss (Meliaceae). Part 10. Isolation and structure elucidation of isonimolicinolide, the first 17-acetoxy tetranortriterpenoid and nimolicinoic acid, the first hexanortriterpenoid with an Apoeuphane (Apotirucallane) skeleton, 1429-32
Hydrolysis of bismetallic complexes of linalyldiphosphate and their participation in the biosynthesis of cyclic monoterpenes, 1479-84

TERPENE (contd)
Studies on terpenoids and steroids. Part 10. Structures of four new natural phenolic D: A-friedo-24-noroleanane triterpenoids, 284954
TERPENOID METABOLISM
On the role of leucine in terpenoid metabolism, 2427-36
TERPHENYL
Synthesis of substituted dibenzophospholes. Part 6. Preparation of symmetrical and non-symmetrical quaterphenyl intermediates, 859-66
TESTOSTERONE
The selective protection of the 3-ketone functions of steroids as heptafluoro-p-tolyl enol ethers, 1129-34
TETRACARBONYLCOBALT ANION
Carbonylation of aryl halides and vinyl bromides mediated by tetracarbonylcobalt anion, 1021-6
TETRAFLAVANOID
Synthesis of condensed tannins. Part 20. Cycloconformations and conformational stability among derivatives of 'angular' tetraflavanoid profisetinidins, 2353-60

## TETRAHYDROFOLATE

The biosynthesis of tuberin from tyrosine and glycine; observations on the stereochemistry associated with the conversion of glycine through methylenetetrahydrofolate into methenyltetrahydrofolate, 1593-8
TETRALONE
The preparation of $2,3,3 \mathrm{a}, 4,5,6$-hexahydro-8-methoxy- $\boldsymbol{H}$-phenalene, $1739-42$
Basic intramolecular acylation. Synthesis of 2-aryl-1-tetralones bearing isopropoxy or benzyloxy groups, synthetic key intermediates for phenolic antileukaemic benzo [ $c$ ]phenanthridine alkaloids, from 2,4-diarylbutyric acid derivatives, 2415-20

## TETRAMIC ACID

Stereospecific synthesis of $N$-protected statine and its analogues via chiral tetramic acid, 1177-82
TETRASULPHUR TETRANITRIDE
Organic heterocyclothiazenes. Part 1. The trithiadiazepine and trithiatriazepine ring systems, 203-6
Organic heterocyclothiazenes. Part 2. Reaction of tetrasulphur tetranitride with phenylacetylene and diphenylacetylene, 20710
Organic heterocyclothiazenes. Part 3. Synthesis and structure of 1,3,5,2,4-trithiadiazepines, 211-6
Organic heterocyclothiazenes. Part 5. Cycloaddition reactions of tetrasulphur tetranitride with highly electron deficient alkynes, 1579-84
Organic heterocyclothiazenes. Part 6. Improved synthesis of trithiadiazepines from tetrasulphur tetranitride and alkynes, 1585-92
TETRAZOLE
3-Aryl-1-tetrazol-5-yltriazenes, bench-stable arenediazonium ion synthons: synthesis of biaryls and aryl halides, 1039-42
Metal-assisted reactions: Part 19. Burst kinetics in heterogeneous catalytic transfer hydrogenolysis, 1069-76
Synthesis and properties of 4 H -imidazoles, 1389-94
TETRONIC ACID
Preparation of acyltetronic acids using t-butyl acetothioacetate: total synthesis of the fungal metabolites carolic, carlosic, and carlic acids, 121-30
THALLIUM ACETATE
Reaction of ( $1 S, 6 S$ )-1,7,7-trimethyl-2,3-dimethylene-transbicyclo[4.4.0]decane with thallium(III) acetate; a new route to (-)-warburganal and (+)-euryfuran, 2137-40
THALLIUM NITRATE
Thallium(III) nitrate-mediated efficient synthesis of 2-arylpropionic acids from 1-halogenoethyl aryl ketones, 1255-8
THERMOLYSIS
Thermal reactivity of $4^{\prime}$-substituted- and $4^{\prime}$-substituted-2-phenylbenzenesulphenanilides, 99-104
Vinyl azides in heterocyclic synthesis. Part 8. Synthesis of the naturally occurring phosphodiesterase inhibitors PDE-I and PDE-II, 931-6
A novel stereoselective access to des- $\boldsymbol{A} \boldsymbol{B}$-aromatic corticosteroids via intramolecular cycloaddition reaction-potential intermediates for the synthesis of corticosteroids, 1727-34
Triphenylmethyl phenylcyanomethylenenitronate; formation and thermolysis, 2163-70
THERMOSALIENT CRYSTAL
The allyl group for protection in carbohydrate chemistry. Part 21.
( $\pm$ )-1,2:5,6- and ( $\pm$ )-1,2:3,4-di- $O$-isopropylidene-myo-inositol. The unusual behaviour of crystals of $( \pm)-3,4$-di- $O$-acetyl-1,2,5,6-tetra- $\boldsymbol{O}$-benzyl-myo-inositol on heating and cooling: a 'thermosalient solid', 2411-4
THIA-ANTHRACENE
10-Thia-anthracenes. Part 3. A re-examination of the reaction of 9-phenylthioxanthylium salt and phenyl-lithium, 18794
THIADIAZOLE
Organic heterocyclothiazenes. Part 1. The trithiadiazepine and trithiatriazepine ring systems, 203-6
Reactivity of 4-amino-2-benzyl-2,3-dihydro-3-oxo-1,2,5-thiadiazole 1,1-dioxide towards amines: synthesis of potential histamine $\mathbf{H}_{2}$ receptor antagonists, 955-60
Organic heterocyclothiazenes. Part 5. Cycloaddition reactions of tetrasulphur tetranitride with highly electron deficient alkynes, 1579-84
Organic heterocyclothiazenes. Part 5. Cycloaddition reactions of tetrasulphur tetranitride with highly electron deficient alkynes, 1579-84
Organic heterocyclothiazenes. Part 6. Improved synthesis of trithiadiazepines from tetrasulphur tetranitride and alkynes, 1585-92
THIAZINE
Heteroatom rearrangements. Extension to aliphatic carboxylic acids, 623-8
THIAZOLE
The Hantzsch thiazole synthesis under acidic conditions: change of regioselectivity, 639-44
Structural features and crystallographic examination of 5-acetyland 5-trifluoroacetyl-2-( $N, N$-disubstituted amino)thiazoles, 230510
A study of three reactions leading to isomeric $2-(N, N$-disubstituted amino)thiazol-5-yl ketones, 2311-6

## THIAZOLIDINONE

Synthesis of thiazolidinones from 1,4-dithiocyanatobut-2-enes and their use as masked 2-amino-1-mercaptobut-3-enes, 2729-36

## THIAZOLIDINYLACETIC ACID

Studies on amino acid derivatives. Part 7. General method for the synthesis of penam and cepham and their substituted derivatives., 1845-52

## THIAZOLIUMOLATE

Reaction of mesoionic thiazol-4-ones with azodicarbonyl dipolarophiles. Cleavage modes of the bi- and tri-cyclic adducts, 1979-86
THIAZOLONE
Reaction of mesoionic thiazol-4-ones with azodicarbonyl dipolarophiles. Cleavage modes of the bi- and tri-cyclic adducts, 1979-86
THIAZOLYL KETONE
$N^{\prime}$-Substituted $N$-acyl- and $N$-imidoyl-thioureas: preparation and conversion of $N^{\prime}, N^{\prime}$-disubstituted compounds into $2-(N, N$ disubstituted amino)thiazol-5-yl ketones, 1153-8
THIENAMYCIN
Stereospecific synthesis of a chiral intermediate for the preparation of thienamycin, penems, and carbapenems: use of the nitro group as a hydroxy protecting group, 2637-42
THIENOIMIDAZOLE
Azoles. Part 7. A convenient synthesis of thieno[2,3- $d$ ]imidazoles, 1457-64
THIIRANIUM ION
Boron trifluoride-promoted reaction of benzenesulphenanilides with alkenes in acetonitrile and benzonitrile: amidino-and amidosulphenylation of alkenes, 2815-8

## THIOCYANATE

Synthesis of thiazolidinones from 1,4-dithiocyanatobut-2-enes and their use as masked 2-amino-1-mercaptobut-3-enes, 2729-36

## THIOESTER

Preparation of acyltetronic acids using t-butyl acetothioacetate: total synthesis of the fungal metabolites carolic, carlosic, and carlic acids, 121-30
Use of $S$-t-butyl acetothioacetate in the preparation of milbemycin seco-analogues, 131-6
THIOGIBBERELLIN
Synthesis of thiogibberellins: $X$-ray molecular and crystal structure of 19,10-thio-3-epigibberellin $\mathbf{A}_{1}, 2111-8$
THIOGLYCOLLATE
Azoles. Part 7. A convenient synthesis of thieno[2,3- $d$ ]imidazoles, 1457-64

## THIOKETONE

Chemistry of silylated thioketones. Part 2. Cycloaddition reactions with 1,3-dienes, 2643-6
Chemistry of silyl thioketones. Part 3. Cycloaddition reactions with heterodienes ( $x$-nitrosostyrene and ketene imines), 2647-52

## THIOL

Hard acid and soft nucleophile systems. Part 11. Hard-soft affinity inversion: dehalogenation of $\alpha$-halogeno ketones with aluminium chloride and a thiol, 1043-8
Synthesis of thiazolidinones from 1,4-dithiocyanatobut-2-enes and their use as masked 2-amino-1-mercaptobut-3-enes, 2729-36
THIOLYSIS
Condensed tannins: base-catalysed reactions of polymeric procyanidins with toluene- $\alpha$-thiol. Lability of the interflavanoid bond and pyran ring., 465-70
THIONE
N -monomethylation of primary amines via intermediate benzothiazol-2 $(3 \mathrm{H})$-imines, $2539-42$
THIOPHENE
Azoles. Part 7. A convenient synthesis of thieno[2,3-d]imidazoles, 1457-64
Photochemical synthesis of bithienyl derivatives, 1777-80
The synthesis of some thiophenophanes and attempted cyclisations to polycyclic thiophenium salts, 2321-32
Interaction of thiophene S,N-ylides with dimethyl acetylenedicarboxylate, 2659-62
THIOPHENOPHANE
The synthesis of some thiophenophanes and attempted cyclisations to polycyclic thiophenium salts, 2321-32
THIOPYRANOSE
5-Thiopyranoses. Part 11. Isopropylidene acetals of 5-thio-dglucose, 5-thio-D-allose, and 5-thio-d-altrose and some of their methyl glycosides, 1413-20
5 -Thiopyranoses. Part 12. Sulphur participation in displacement reactions of sulphonate esters of 5-thio-D-allose, 5-thio-D-altrose, and 5-thio-D-glucose derivatives, 2061-8

## THIOUREA

$N^{\prime}$-Substituted $N$-acyl- and $N$-imidoyl-thioureas: preparation and conversion of $N^{\prime}, N^{\prime}$-disubstituted compounds into $2-(N, N$ disubstituted amino)thiazol-5-yl ketones, 1153-8
A study of three reactions leading to isomeric 2 -( $N, N$-disubstituted amino)thiazol-5-yl ketones, 2311-6
New heterocyclization reactions for the preparation of fused [1,2,4]triazoles: synthesis of $1,2,4$-triazolo $[4,3-b][1,2,4]$ triazole derivatives from 4-amino-1,2,4-triazoles and carbodi-imides or via iminophosphoranes and disubstituted thioureas, 2667-72

## THIOXANTHENE

10-Thia-anthracenes. Part 3. A re-examination of the reaction of 9phenylthioxanthylium salt and phenyl-lithium, 187-94
THROMBOXANE
Synthesis of stable analogues of TXA $2,137-50$
Thromboxane $\mathrm{A}_{2}$ analogues from 8-oxabicyclo[3.2.1]oct-6-en-3ones, 1657-66
THYMIDYLATE SYNTHETASE
Reaction of 5-trifluoromethyl-2'-deoxyuridine and 1-methyl-5trifluoromethyluracil with methoxyamine: model studies for the interaction between thymidylate synthetase and 5-trifluoromethyl-2'-deoxyuridine 5 '-phosphate, 2141-8
TIN
Reaction of diazonium salts with transition metals. Part 13. Palladium-catalyzed carbonylative coupling of arenediazonium salts with organotin reagents to give aromatic ketones, 1511-4
Regioselective Diels-Alder reactions. The nitro group as a regiochemical control element, 1929-36
TITANIUM
Asymmetric oxidation of sulphides to sulphoxides catalysed by titanium complexes of $N$-salicylidene-L-amino acids, 71-4

## TRANSESTERIFICATION

Chemistry of novel compounds with multifunctional carbon structure. Part 2. The first example of optically active multifunctional carbon compounds, 2203-8
TRANSITION STATE GEOMETRY
Intramolecular reactions of $N$-nitrenes: description of the transition state geometry for addition to alkenes, 1135-46
TRANSPORT PROPERTY
Specific $\mathrm{Ag}^{+}$ion binding and transport properties of 'tripod' type open-chain cryptands, 1697-700

## TRIARYLPHOSPHINE

Reactionsoftris(2,6-dimethoxyphenyl)phosphinewithepoxides, 151-44

## TRIAZADIENE

Ring closure of ortho-blocked 4 -aryl-1,2,4-triaza-1,3-dienes via 1,6electrocyclisation followed by Diels-Alder dimerisation, 1533-6
TRIAZENE
3-Aryl-1-tetrazol-5-yltriazenes, bench-stable arenediazonium ion synthons: synthesis of biaryls and aryl halides, $1039-42$
TRIAZOLE
Photolysis of 1 -aryl-1,2,3-triazoles; rearrangement via 1 H -azirines, 413-22
Cyclization of isothiosemicarbazones. Part 7. Synthesis of $N$-alkenyl-1,2,4-triazoles with anti-Saytzeff orientation, 156772
Reaction of azoles with ethyl bromopyruvate oxime: alkylation by substitution and by elimination-addition, 2235-40
New heterocyclization reactions for the preparation of fused [1,2,4]triazoles: synthesis of $1,2,4$-triazolo[4,3- $b][1,2,4]$ triazole derivatives from 4-amino-1,2,4-triazoles and carbodi-imides or via iminophosphoranes and disubstituted thioureas, 2667-72
TRIAZOLINE
Intramolecular 1,3-dipolar cycloaddition of alkyl azidoalkylidenemalonate and 1,3 -dipolar cycloreversion of the triazoline intermediate: synthesis and reactions of an N -sulphonyl-2,4-dihydropyrrolo[3,4-b]indole, 977-80
TRIAZOLOISOQUINOLINE
Triazolopyridines. Part 7. Preparation of bromo-triazolopyridines and -triazoloisoquinolines, 1865-8
TRIAZOLOPYRIDINE
Triazolopyridines. Part 7. Preparation of bromo-triazolopyridines and -triazoloisoquinolines, 1865-8
TRIAZOLOPYRIMIDINE
An unexpected double cycloaddition of [1,2,4]triazolo[1,5a]pyrimidine $N$-ylide with activated acetylenes and alkenes, 2531-8
TRIAZOLOTHIADIAZINE
Synthesis of 6,7 -dihydro- $5 H$-1,2,4-triazolo[3,4-b] [1,3,4]thiadiazines by a $\mathrm{C}-\mathrm{C}$ ring cyclization under mild conditions, 1853-60
TRICARBONYLCHROMIUM COMPLEX
The diastereoselective functionalisation of arene tricarbonylchromium complexes containing a benzylic heteroatom substituent, 1805-12
TRICYCLODODECENE
Stereoselective total synthesis of $( \pm)$-3-oxosilphinene through intramolecular Diels-Alder reaction, 1331-8

## TRICYCLOHEXANE

Regioselective ring-opening and dimerisation of methyl 3,3dimethylcyclopropenecarboxylate, 1609-12
TRICYCLO-OCTANONE
Thermal cycloaddition of $N$-arylmaleimides to phenols: the convenient synthesis of bicyclo[2.2.2]oct-2-en-5-one and tricyclo [3.3.0.0 $0^{2,8}$ ] octan-2-one derivatives from phenols, 1147-52
TRIFLUOROMETHANESULPHONIC ACID
Trifluoromethanesulphonic acid as a catalyst for the ethylation of benzene, 2049-56
TRIFLUOROMETHYLPHENOL
Chlorous acid oxidation of trifluoromethylphenols: cyclopentenolones by benzilic acid ring contraction, 1861-4
TRIOXABICYCLOHEPTENE
Photosensitized oxidation of furans. Part 12. Solvent effects in thermal rearrangement of the 2,5-peroxides of 2,5 -unsubstituted furans, $1833-40$
TRIPHENYLENE OXIDE
Synthesis of triphenylene 1,2-oxide (1,2-epoxy-1,2dihydrophenylene) and absolute configuration of the trans-1,2dihydro diol metabolite of triphenylene. Crystal structure of $(-)$ ( $1 R, 2 R$ )-trans-2-bromo-1-menthyloxyacetoxy-1,2,3,4tetrahydrotriphenylene, 369-76
TRIPOD LIGAND
Specific $\mathrm{Ag}^{+}$ion binding and transport properties of 'tripod' type open-chain cryptands, 1697-700
TRI-P-TOLYL ETHER
Studies on the synthesis of linear aliphatic compounds. Part 2. The realisation of a strategy for repeated molecular doubling, 244754

## TRIPYRRIN

Autoxidation and solvolysis products of octaethylverdohaemochrome, 1183-8
TRIQUINANE
Stereoselective total synthesis of $( \pm)$-3-oxosilphinene through intramolecular Diels-Alder reaction, 1331-8

## TRITERPENE

New triterpenoid pentasaccharides from Androsace saxifragifolia, 1963-8
TRITERPENE GLYCOSIDE
Triterpenoid glycosides of Corchorus acutangulus Lam., 629-34
TRITHIADIAZEPINE
Organic heterocyclothiazenes. Part 3. Synthesis and structure of 1,3,5,2,4-trithiadiazepines, 211-6
Organic heterocyclothiazenes. Part 4. Chemistry of 1,3,5,2,4trithiadiazepines, 217-24
Organic heterocyclothiazenes. Part 5. Cycloaddition reactions of tetrasulphur tetranitride with highly electron deficient alkynes, 1579-84
Organic heterocyclothiazenes. Part 6. Improved synthesis of trithiadiazepines from tetrasulphur tetranitride and alkynes, 1585-92
TRITHIATRIAZEPINE
Organic heterocyclothiazenes. Part 5. Cycloaddition reactions of tetrasulphur tetranitride with highly electron deficient alkynes, 1579-84
Organic heterocyclothiazenes. Part 6. Improved synthesis of trithiadiazepines from tetrasulphur tetranitride and alkynes, 1585-92

## TRITYL ISOCYANATE

Triphenylmethyl phenylcyanomethylenenitronate: formation and thermolysis, 2163-70

## TRYPTANTHRIN

Reduction and stereochemical studies through n.m.r. and $X$-ray techniques of indolo[2,1-b]quinazolines, 519-28

## TRYPTOPHAN

Conversion of $N$-hydroxytryptophans into $\alpha, \beta$-dehydrotryptophan. An approach to the neoechinulin series, 2473-80
Conversion of $N$-hydroxytryptophan into $\alpha$-functionalised tryptophans. An approach to the sporidesmin series, 2481-90

## TUBERIN

The biosynthesis of tuberin from tyrosine and glycine; observations on the stereochemistry associated with the conversion of glycine through methylenetetrahydrofolate into methenyltetrahydrofolate 1593-8
TYROSINE
The biosynthesis of tuberin from tyrosine and glycine; observations on the stereochemistry associated with the conversion of glycine through methylenetetrahydrofolate into methenyltetrahydrofolate 1593-8
UMPOLUNG
Carbon-carbon bond formation using hypervalent iodine under Lewis acid conditions: scope of the method for the synthesis of butane-1,4-diones, 559-62
Hypervalent iodine oxidation of silyl enol ethers. A direct route to x-hydroxy ketones, 1781-4
UNCARAMINE
Structure elucidation of the binary indole alkaloid uncaramine, 571-6
UNCARIA GAMBIER
Structure elucidation of the binary indole alkaloid uncaramine, 571-6
UNDECADIENE
Photosensitised oxidation of model unsaturated lipid systems: ( $4 Z, 7 Z$ )-undeca-4,7-diene and (4Z)-undec-4-en-7-yne, 19992008
URACIL
Synthesis of 5-(1-substituted ethyl)uracil derivatives and some of their chemical and biological properties, 457-64
Some chemical reactions of 5 -vinyluracil and $2^{\prime}$-deoxy-5vinyluridine, 1325-30
URETHANYL RADICAL
Reactions of carbamyl (urethanyl) radicals: intramolecular aromatic additions, 1243-6

## URIDINE

Synthesis of 5-(1-substituted ethyl)uracil derivatives and some of their chemical and biological properties, 457-64
Some chemical reactions of 5 -vinyluracil and $2^{\prime}$-deoxy-5vinyluridine, 1325-30

## URO'GEN

Biosynthesis of porphyrins and related macrocycles. Part 29. Synthesis and chemistry of 2,2-disubstituted 2 H -pyrroles (pyrrolenines), 2027-48

## UROPORPHYRIN

Synthetic and biosynthetic studies of porphyrins. Part 8. Syntheses
of hepta-, hexa-, and penta-carboxylic porphyrins related to uroporphyrin-I, 277-86

## VANCOMYCIN

Structure elucidation of the glycopeptide antibiotic complex A40926, 2103-8

## VERDOHAEMOCHROME

Autoxidation and solvolysis products of octaethylverdohaemochrome, 1183-8
VERNOLEPIN
Transformation of santonin into ( + )-deoxyvernolepin and related dilactones, 2833-8
VILSMEIER REAGENT
Reagents and synthetic methods. Part 58. Synthesis of $\beta$-lactams from acetic acids and imines promoted by Vilsmeier type reagents, 845-50
VINDOLINE
Aspidosperma alkaloids. Conversion of tabersonine into vindoline, 155-62
VINYL AZIDE
Vinyl azides in heterocyclic synthesis. Part 5. Thermal and photochemical decomposition of azidocinnamates containing ortho-cycloalk ylidene substituents, 913-20
Vinyl azides in heterocyclic synthesis. Part 6. Synthesis of isoquinolines by intramolecular aza-Wittig reaction, 921-6
Vinyl azides in heterocyclic synthesis. Part 7. Synthetic studies on the cytotoxic marine alkaloid amphimedine, 927-30
VINYL IODIDE
Stereoselective bifunctionalization of alkynes by means of the mercury(iI) salt-iodine combination, 1017-20

## VINYLOGOUS KETO ESTER

The chemistry of aryl-lead(IV) tricarboxylates. Reaction with vinylogous $\beta$-keto esters, 2689-94
VINYLSERINE
Structural studies on bioactive compounds. Part 7. The design and synthesis of $\alpha$-substituted serines as prospective inhibitors of serine hydroxymethyltransferase., 2617-24
VINYL SULPHIDE
Phenylthioallyl and phenylthiovinyl phosphine oxides: synthesis of 1-phenylthiobutadienes and a three-component synthesis of ketones, 967-76
VINYLTRIMETHYLENEMETHANE
Use of the diazoalkane-thione reaction in the synthesis of a vinyltrimethylenemethane precursor, 2497-504

## VIOLOGEN

Synthesis of bipyridyl-, viologen-, and quinone-bridged porphyrins, 2385-94
VITAMIN B $1_{12}$
Synthetic studies relevant to biosynthetic research on vitamin $B_{12}$. Part 4. Development of the photochemical route to isobacteriochlorins, 1667-78
Synthetic studies relevant to biosynthetic research on vitamin $B_{12}$. Part 5. Synthesis of ( $R S$ )-ring-B imide, 1679-88
Biosynthesis of porphyrins and related macrocycles. Part 28. Development of a pulse labelling method to determine the $C$ methylation sequence for vitamin $\mathrm{B}_{12}$., 1689-96
VULGARIN
Microbial transformations of sesquiterpenoids: conversion of deoxyvulgarin by Rhizopus nigricans and Aspergillus ochraceous, 471-4
WAGNER-MEERWEIN REARRANGEMENT
Synthesis of 16 -substituted 17 -nor-13 -steroids and skeletal rearrangement of 17 -nor- $5 \alpha, 13 \alpha$-androstane-16 6 -carbonyl $m$ chlorobenzoyl peroxide, 1247-54
WARBURGANAL
Reaction of (1S,6S)-1,7,7-trimethyl-2,3-dimethylene-transbicyclo[4.4.0] decane with thallium(III) acetate; a new route to ( - )-warburganal and ( + )-euryfuran, 2137-40
WIDMAN-STOERMER REACTION
Cinnolines. Part 1. Widman-Stoermer reactions of functionalised 2-phenylbut-2-enes to give cinnolinecarbaldehydes, 1541-6

## WITTIG-HORNER

Gas-liquid phase-transfer catalysis: Wittig-Horner reaction in heterogeneous conditions, 713-4
Di-heteroarylethylenes: synthesis and donor properties, 2631-6

## WITTIG REACTION

Wittig reactions with $\beta$-lactam carbonyl functions. The effect of $C$ 7 substitution on the chemistry of penicillins and clavulanic acid derivatives, 1369-76
Vinyl azides in heterocyclic synthesis. Part 9. Synthesis of the

## WITTIG REACTION (contd)

isoquinolone alkaloid siamine by intramolecular aza-Wittig reaction, 1395-8
Tandem Wittig reactions of 1,1-diphenylphosphorinanium salt, 1537-40
Total synthesis of $(+)$-milbemycin $\beta_{3}, 1623-34$
Total synthesis of analogues of the $\beta$-lactam antibiotics. Part 3. 2Ethoxycarbonyl derivatives of carbapen-1-em-3-exo-carboxylates and carbapenam-3-exo-carboxylates, 2361-70
Studies on the synthesis of linear aliphatic compounds. Part 2. The realisation of a strategy for repeated molecular doubling, 244754
Studies on the synthesis of linear aliphatic compounds. Part 3. The synthesis of paraffins with very long chains, 2455-64

## WOLFF REARRANGEMENT

Synthesis of 1,2-diazetidinones (aza- $\beta$-lactams) by photochemical ring contraction, 877-84
Regioselectivity in the photochemical ring contraction of 4-
diazopyrazolidine-3,5-diones to give aza- $\beta$-lactams, 885 98

## XANTHINIUM METHANIDE

Reactions of xanthinium $N(7)$-ylides with olefinic dipolarophiles, 1211-20
YLIDE
Reactions of xanthinium $N(7)$-ylides with olefinic dipolarophiles, 1211-20
Interaction of thiophene $\mathrm{S}, \mathrm{N}$-ylides with dimethyl acetylenedicarboxylate, 2659-62
$\boldsymbol{Z E A}$ MAYS
Preparation of 7-hydroxy-2-oxoindolin-3-ylacetic acid and its $\left[{ }^{13} \mathrm{C}_{2}\right],\left[5-\mathrm{n}-{ }^{3} \mathbf{H}\right]$, and $\left[5-\mathrm{n}-{ }^{3} \mathrm{H}\right]-7-O$-glucosyl analogues for use in the study of indol-3-ylacetic acid catabolism, 753-8

## ZEYLASTERAL

Studies on terpenoids and steroids. Part 10. Structures of four new natural phenolic D: A-friedo-24-noroleanane triterpenoids, 284954

