Cyclocondensation of Acylketene *S,N*- and *N,N*-acetals with Maleic Anhydride and Maleimide: A Facile One-Step Synthesis of Pyrano[3,4-*c*]pyrrole, Pyrrolo [3,4-*c*]pyridine and Condensed Pyrrole Derivatives[1]

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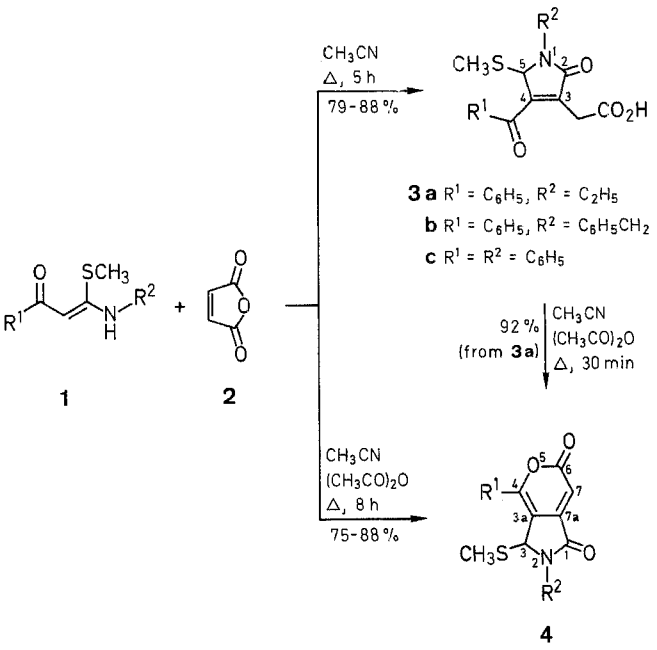
The acylketene *S,N*-acetals **1a–c** react with maleic anhydride **(2)** in refluxing acetonitrile to give the corresponding 3-pyrrolin-2-one-3-acetic acid derivatives **3a–c** in good yields. Condensation of *S,N*-acetals **1a–j** and **2** in presence of acetic anhydride directly afforded the corresponding 2-substituted-3-methylthio-4-aryl (or methyl)-1,6-dioxo-2,3-dihydropyrano[3,4-*c*]pyrroles **4a–j** in excellent yields. The reaction of cyclic *S,N*- **(5a–c)** and *N,N*- **(5d–f)** acetals with **2** in refluxing acetonitrile gave the corresponding pyrrolo[2,1-*b*]thiazole **(6a–c)** and pyrrolo[1,2-*a*]imidazole **(6d–f)** derivatives, respectively, in good yields. Similarly, the condensation of *S,N*-acetals **1a** and **1d** with maleimide directly yielded the respective pyrrolo[3,4-*c*]pyridine derivatives **9a** and **9b**, while the corresponding pyrrolinone-3-acetamide derivatives **8a** and **8b** were obtained under similar conditions, when the reaction time was reduced.

In our recent report,[2] we have described the synthesis of novel 2(1*H*)-pyridones by cyclocondensation of acylketene *S,N*-acetals with malonyl chloride. In continuation of these studies, we now report the reactions of these intermediates and few cyclic *N,N*-acetals with maleic anhydride and maleimide, which provide facile one step synthesis of functionalized pyrano[3,4-*c*]pyrrole, pyrrolo[3,4-*c*]pyridine and other condensed pyrrole derivatives.

When the *S,N*-acetal **1a** was reacted with maleic anhydride in refluxing acetonitrile, work-up of the reaction mixture afforded a product (87%), which was characterized as pyrrolinone-3-acetic acid (**3a**).[3] The corresponding *N*-benzyl-, **1b**, and *N*-phenyl-, **1c**, *S,N*-acetals similarly gave the respective pyrrolinones **3b** and **3c** in good yields. The pyrrolinone **3a** was cyclized in presence of acetic anhydride, when the corresponding 2-ethyl-3-methylthio-4-phenyl-1,6-dioxo-2,3-dihydropyrano[3,4-*c*]pyrrole **(4a)** was obtained in 92% yield. In an alternative experiment, the pyranopyrrole **4a** was directly obtained in one step in comparable



1,4	R^1	R^2	1,4	R^1	R^2
a	C_6H_5	C_2H_5	**f**	4-$CH_3OC_6H_4$	C_2H_5
b	C_6H_5	$C_6H_5CH_2$	**g**	4-ClC_6H_4	C_6H_5
c	C_6H_5	C_6H_5	**h**	4-ClC_6H_4	$C_6H_5CH_2$
d	C_6H_5	CH_3	**i**	CH_3	C_2H_5
e	4-$CH_3OC_6H_4$	CH_3	**j**	4-$CH_3C_6H_4$	$C_6H_5CH_2$

Table 1. Products **3a–c** and **8a–b** Prepared

Product	Yield (%)	mp[a] (°C)	Molecular Formula[b]	IR (KBr)[c] ν (cm^{-1})	^{1}H-NMR ($CDCl_3$) δ, J(Hz)	MS (70 eV)[e] *m/z* (%)
3a	87	138	$C_{16}H_{17}NO_4S$ (319.4)	1720, 1672, 1642	1.15 (t, 3H, J = 7, CH_2CH_3); 1.67 (s, 3H, SCH_3); 3.25 (s, 2H, CH_2CO_2H); 3.32–4.00 (m, 2H, CH_2CH_3); 5.37 (s, 1H, H-5); 7.33–7.82 (m, $5H_{arom}$); 9.29 (s, 1H, OH, exchangeable with D_2O)	319 (M^+, 1); 275 (9); 228 (100)
3b	79	154	$C_{21}H_{19}NO_4S$ (381.5)	1705, 1684, 1660	1.74 (s, 3H, SCH_3); 3.30 (s, 2H, CH_2CO_2H); 4.20 (d, 1H, J = 17, H_A of CH_2); 5.15 (d, 1H, J = 17, H_B of CH_2); 5.16 (s, 1H, H-5); 7.20 (s, $5H_{arom}$); 7.33–7.80 (m, $5H_{arom}$); 9.13 (br s, 1H, OH, exchangeable with D_2O)	337 (M^+ – 44,4); 290 (28)
3c	82	168	$C_{20}H_{17}NO_4S$ (367.4)	1716, 1660, 1640	1.68 (s, 3H, SCH_3); 3.39 (s, 2H, CH_2); 5.95 (s, 1H, H-5); 7.10–7.93 (m, $10H_{arom}$); 9.08 (br s, 1H, OH, exchangeable with D_2O)	367 (M^+, 3); 323 (9); 276 (83)
8a	88	156	$C_{15}H_{16}N_2O_3S$ (304.4)	3360, 3170, 1680, 1650, 1624	1.73 (s, 3H, SCH_3); 3.03 (s, 3H, NCH_3); 3.33 (s, 2H, CH_2); 5.37 (s, 1H, H-5); 6.00, 6.80 (br s, 1H each, NH_2, exchangeable with D_2O); 7.37–7.68 (m, $3H_{arom}$); 7.84–8.03 (m, $2H_{arom}$)	304 (M^+, 9); 257 (19); 214 (100)
8b	85	158	$C_{16}H_{18}N_2O_3S$ (318.4)	3360, 3168, 1678, 1650, 1625	1.20 (t, 3H, J = 7, CH_2CH_3); 1.71 (s, 3H, SCH_3); 3.23 (s, 2H, CH_2CO); 3.15–3.63 (dq, 1H, J = 17, H_A of CH_2CH_3); 3.63–4.00 (dq, 1H, J = 17, H_B of CH_2CH_3); 5.56 (s, 1H, H-5); 6.60, 7.22 (br s, 1H each, NH_2, exchangeable with D_2O); 7.38–8.13 (m, $5H_{arom}$)[f]	318 (M^+, 11); 228 (M^+ – 90, 100)

[a] Uncorrected, recorded on Thomas Hoover apparatus.
[b] Satisfactory microanalyses obtained: C ±0.31, H ±0.29, N ±0.28.
[c] Recorded on Perkin-Elmer 297 spectrometer.
[d] Recorded on 90 MHz using a Varian EM-390 spectrometer.
[e] Recorded on Jeol JMS-D 300 spectrometer.
[f] In DMSO-d_6 $CDCl_3$.

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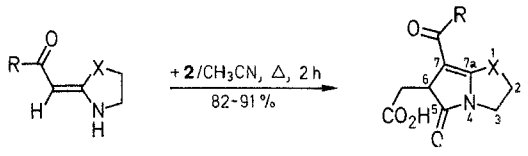
yield (85%), when **1a** and **2** were refluxed in acetonitrile in the presence of acetic anhydride. The other substituted pyranopyrrole **4b–j** were similarly obtained from the respective **1b–j** and **2** in 75–88% overall yields. The reaction was extended to cyclic *S,N*- **5a–c** and *N,N*- **5d–f** acetals also. Thus **5a–c** and **2** in refluxing acetonitrile afforded the corresponding pyrrolo[2,1-*b*]thiazole derivatives **6a–c** in 85–91% overall yields. Similarly, **5d–f** under identical conditions yielded the respective pyrrolo[1,2-*a*]imidazolines **6d–f** in good yields. The structures of **6a–f** were established with the help of spectral and analytical data (Table 3). Attempted cyclization of **6a** or **6d** in refluxing acetic anhydride, however gave only intractable mixture of products.



5 **6**

5, 6	R	X	5, 6	R	X
a	4-ClC_6H_4	S	**d**	C_6H_5	NH
b	4-$CH_3OC_6H_4$	S	**e**	4-ClC_6H_4	NH
c	CH_3	S	**f**	4-$CH_3OC_6H_4$	NH

Reaction of **1** with maleimide was next investigated. A few enaminoesters/nitriles and 2-(benzylamino) propenylmethyl ketone are reported[4] to have been condensed with maleimide recently to give 5-oxo-2-pyrrolin-4-acetamide derivatives, which were further cyclized in the presence of base to afford pyrrolo[3,4-*c*]pyridine derivatives in good yields. Incidentally, when **1a** and **1d** were refluxed with maleimide in acetonitrile for 8 hours, the corresponding pyrrolopyridines **9a** and **9b** were directly obtained in good yields. The open-chain analogs 2-oxo-3-pyrrolin-3-acetamide derivatives **8a** and **8b** were also formed under similar conditions, when reaction time was reduced (2 hours).

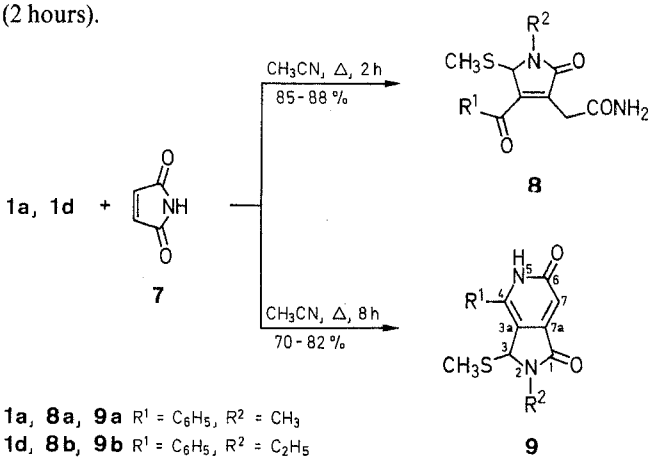


Table 2. Products **4a–j** and **9a–b** Prepared

Product	Yield (%)	mp[a] (°C)	Molecular Formula[b]	IR (KBr)[c] ν (cm^{-1})	^{1}H-NMR (Solvent/TMS)[d] δ, J(Hz)	MS (70 eV)[e] *m/z* (%)
4a	85	148	$C_{16}H_{15}NO_3S$ (301.4)	1727, 1693	DMSO-d_6: 1.26 (t, 3H, J = 7, CH_2CH_3); 1.50 (s, 3H, SCH_3); 3.48 (dq, 1H, J = 17, H_A of CH_2CH_3); 3.78 (dq, 1H, J = 17, H_B of CH_2CH_3); 6.36 (s, 1H, H-3); 6.49 (s, 1H, H-7); 7.40–7.45 (m, $3H_{arom}$); 7.75–8.12 (m, $2H_{arom}$)	254 ($M^+ - 47$, 100); 226 (16)
4b	80	134	$C_{21}H_{17}NO_3S$ (363.4)	1719, 1710	CF_3CO_2H: 1.60 (s, 3H, SCH_3); 4.56 (d, 1H, J = 15, H_A of CH_2); 5.38 (d, 1H, J = 15, H_B of CH_2); 5.68 (s, 1H, H-3); 6.98 (s, 1H, H-7); 7.18–7.84 (m, $10H_{arom}$)	316 ($M^+ - 47$, 100)
4c	86	192	$C_{20}H_{15}NO_3S$ (349.4)	1720, 1705	DMSO-d_6: 1.53 (s, 3H, SCH_3); 6.65 (s, 1H, H-3); 7.08 (s, 1H, H-7); 7.32–7.82 (m, $8H_{arom}$); 7.83–8.00 (m, $2H_{arom}$)	302 ($M^+ - 47$, 100); 274 (10)
4d	84	176	$C_{15}H_{13}NO_3S$ (287.3)	1721, 1698	$CDCl_3$: 1.66 (s, 3H, SCH_3); 3.14 (s, 3H, NCH_3); 5.70 (s, 1H, H-3); 6.60 (s, 1H, H-7); 7.32–7.65 (m, $3H_{arom}$); 7.65–7.94 (m, $2H_{arom}$)	240 ($M^+ - 47$, 100); 212 (18)
4e	81	164	$C_{16}H_{15}NO_4S$ (317.4)	1720, 1685	CF_3CO_2H: 1.20 (s, 3H, SCH_3); 2.89 (s, 3H, NCH_3); 3.53 (s, 3H, OCH_3); 5.45 (s, 1H, H-3); 6.43 (s, 1H, H-7); 6.70 (d, A_2B_2, $2H_{arom}$); 7.43 (d, A_2B_2, $2H_{arom}$)	370 ($M^+ - 47$, 100); 242 (12)
4f	84	158	$C_{17}H_{17}NO_4S$ (331.4)	1711 (br)	CF_3CO_2H: 1.40 (t, 3H, J = 7, CH_2CH_3); 1.60 (s, 3H, SCH_3); 3.50–4.28 (m, 2H, NCH_2); 3.97 (s, 3H, OCH_3); 5.97 (s, 1H, H-3); 6.89 (s, 1H, H-7); 7.15 (d, A_2B_2, $2H_{arom}$); 7.87 (d, A_2B_2, $2H_{arom}$)	284 ($M^+ - 47$, 100); 256 (10)
4g	88	218	$C_{20}H_{14}ClNO_3S$ (383.9)	1727, 1708	CF_3CO_2H: 1.73 (s, 3H, SCH_3); 6.57 (s, 1H, H-3); 7.18 (s, 1H, H-7); 7.45–7.80 (m, $7H_{arom}$); 7.81–8.11 (d, A_2B_2, $2H_{arom}$)	338 (36); 336 ($M^+ - 47$, 100); 308 (8)
4h	80	124	$C_{21}H_{16}ClNO_3S$ (397.9)	1718, 1704	$CDCl_3$: 1.58 (s, 3H, SCH_3); 4.36 (d, 1H, J = 15, H_A of CH_2); 5.33 (d, 1H, J = 15, H_B of CH_2); 5.48 (s, 1H, H-3); 6.70 (s, 1H, H-7); 7.33 (s, $5H_{arom}$); 7.30–7.71 (dd, A_2B_2, $4H_{arom}$)	352 (9); 350 ($M^+ - 47$, 18)
4i	79	108	$C_{11}H_{13}NO_3S$ (239.3)	1728, 1692	CF_3CO_2H: 1.34 (t, 3H, J = 7, CH_2CH_3); 1.74 (s, 3H, SCH_3); 2.60 (s, 3H, $ArCH_3$); 3.45–4.32 (m, 2H, CH_2CH_3); 5.73 (s, 1H, H-3); 6.92 (s, 1H, H-7)	239 (M^+, 19); 192 ($M^+ - 47$, 100); 164 (30)
4j	75	91	$C_{22}H_{19}NO_3S$ (377.5)	1715, 1700	$CDCl_3$: 1.55 (s, 3H, SCH_3); 2.40 (s, 3H, CH_3); 4.40 (d, 1H, J = 15, H_A of CH_2); 5.35 (d, 1H, J = 15, H_B of CH_2); 5.58 (s, 1H, H-3); 6.72 (s, 1H, H-7); 7.41 (s, $5H_{arom}$); 7.28 (d, A_2B_2, $2H_{arom}$); 7.64 (d, A_2B_2, $2H_{arom}$)	330 ($M^+ - 47$, 37)
9a	70	249	$C_{15}H_{14}N_2O_2S$ (286.4)	1685, 1660, 1623	DMSO-d_6: 1.33 (s, 3H, SCH_3); 3.04 (s, 3H, CH_3); 6.07 (s, 1H, H-3); 6.63 (s, 1H, H-7); 7.38–7.78 (m, $5H_{arom}$); 11.88 (br s, 1H, NH, exchangeable with D_2O)	239 ($M^+ - 47$, 100)
9b	82	218	$C_{16}H_{16}N_2O_2S$ (300.4)	1684, 1660, 1625	$CDCl_3$: 1.24 (t, 3H, J = 7, CH_2CH_3); 1.38 (s, 3H, SCH_3); 3.41 (dq, 1H, J = 17,7, H_A of CH_2); 3.90 (dq, 1H, J = 17,7, H_B of CH_2); 5.70 (s, 1H, H-3); 6.85 (s, 1H, H-7); 7.58 (br s, $5H_{arom}$)	253 ($M^+ - 47$, 100); 225 (26)

[a] As in Table 1.
[b] Satisfactory microanalyses obtained: C ±0.28, H ±0.32, N ±0.30.
[c–e] As in Table 1.

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Table 3. Products **6a–f** Prepared

Product	Yield (%)	mp[a] (°C)	Molecular Formula[b]	IR (KBr)[c] ν (cm^{-1})	^{1}H-NMR (DMSO-d_6/TMS)[d] δ, J(Hz)	MS (70 eV)[e] m/z (%)
6a	85	220	$C_{15}H_{12}ClNO_4S$ (337.8)	1733, 1647, 1612	2.70–2.91 (m, 2H, CH_2CO); 3.00–3.28 (m, 2H, SCH_2); 3.55–3.86 (m, 2H, NCH_2); 4.29–4.60 (m, 1H, H-6); 7.52 (s, $4H_{arom}$)	339 (8); 337 (M^+, 24); 295 (34); 293 (M^+ – 44, 100)
6b	87	170	$C_{16}H_{15}NO_5S$ (333.4)	1722, 1646, 1603	2.80 (d, 2H, J = 5.5, CH_2CO); 2.97–3.18 (m, 2H, SCH_2); 3.57–3.97 (m, 2H, NCH_2); 3.83 (s, 3H, OCH_3); 4.23–4.68 (m, 1H, H-6); 6.90 (d, A_2B_2, $2H_{arom}$); 7.52 (d, A_2B_2, $2H_{arom}$)	333 (M^+, 4); 289 (M^+ – 44, 34)
6c	91	222	$C_{10}H_{11}NO_4S$ (241.2)	1720, 1650, 1640	2.31 (s, 3H, CH_3); 2.66–2.89 (m, 2H, CH_2CO); 2.90–3.28 (m, 2H, SCH_2); 3.44–3.96 (m, 2H, NCH_2); 4.18–4.50 (m, 1H, H-6)	241 (M^+, 4); 197 (M^+ – 44, 70)
6d	82	198	$C_{15}H_{14}N_2O_4$ (286.3)	3258, 1718, 1680, 1620	2.59–2.80 (m, 2H, CH_2CO); 3.43–4.04 [m, 5H, $N(CH_2)_2$ and H-6]; 7.35 (s, $5H_{arom}$); 9.55 (br s, 1H, OH, exchangeable with D_2O)	268 (M^+ – 18, 10); 242 (M^+ – 44,5)
6e	87	150	$C_{15}H_{13}ClN_2O_4$ (320.7)	3265, 1735, 1712, 1639	2.28–2.81 (m, 2H, CH_2CO); 3.38–4.12 [m, 5H, $N(CH_2)_2$ and H-6]; 7.23–7.61 (dd, A_2B_2, $4H_{arom}$); 7.97 (br s, 1H, OH, exchangeable with D_2O)	304 (1); 302 (M^+ – 18, 5); 278 (6); 276 (M^+ – 44,2)
6f	88	168	$C_{16}H_{16}N_2O_5$ (316.3)	3222, 1708, 1691, 1629	2.56–2.78 (m, 2H, CH_2CO); 3.48–4.15 [m, 5H, $N(CH_2)_2$ and H-6]; 3.77 (s, 3H, OCH_3); 6.88 (d, A_2B_2, $2H_{arom}$); 7.35 (d, A_2B_2, $2H_{arom}$); 9.50 (br s, 1H, OH, exchangeable with D_2O)	298 (M^+ – 18,2)

[a] As in Table 1.
[b] Satisfactory microanalyses obtained: C ±0.34, H ±0.26, N ±0.31.
[c–e] As in Table 1.

The condensation of *S,N*- and *N,N*-acetals **1** and **5** with maleic anhydride and maleimide provides a convenient one step method for the synthesis of a variety of pyrano[3,4-*c*]pyrrole, pyrrolo[3,4-*c*]pyridine and condensed pyrrole derivatives under simple reaction conditions. Few pyrano[3,4-*c*]pyrrole derivatives are described in the literature,[5–7] which are obtained through multistep routes and in one case, by acid catalyzed cyclization of naturally occurring Kainic acid.[8] The pyrrolo[2,1-*b*]thiazolines **6a–c** possess structural framework similar to γ-lactam analogs of penicillanic acid[9] with potential biological activity.

The starting *S,N*-acetals **1a–j**, **5a–c** and *N,N*-acetals **5d–f** were prepared according to earlier reported procedures.[10–12]

1-Alkyl/aryl-4-aroyl-5-methylthio-2-oxo-3-pyrrolin-3-acetic Acid (3a–c); 7-Acetyl/aroyl-5-oxo-2,3,5,6-tetrahydropyrrolo[2,1-*b*]thiazole-6-acetic Acid (6a–c); 7-Aroyl-5-oxo-2,3,5,6-tetrahydro-1*H*-pyrrolo[1,2-*a*]imidazole-6-acetic Acid (6d–f); 1-Alkyl-4-benzoyl-5-methylthio-2-oxo-3-pyrrolin-3-acetamide(8a–b), and 2-Alkyl-3-methylthio-4-phenyl-1,6-dioxo-2,3,5,6-tetrahydro-5*H*-pyrrolo[3,4-*c*]pyridine (9a–b): General Procedure:

A solution of **1** or **5** (20 mmol) and **2** or **7** (20 mmol) in MeCN (30 mL) is refluxed for 2 h (**6a–f, 8a–b**), 5 h (**3a–c**) and 8 h (**9a–b**). The mixture is cooled, poured into ice-water (50 mL), extracted with $CHCl_3$ (2 × 50 mL), dried (Na_2SO_4) and evaporated to give crude products, which are purified either by crystallization from MeOH (**6a–f, 9a–b**) or by filtering through a silica gel column (**3a–c, 8a–b**) using hexane/EtOAc (9:1) as eluent (see Tables 1–3).

2-Alkyl/aryl-4-aryl/methyl-3-methylthio-1,6-dioxo-2,3-dihydropyrano-[3,4-*c*]pyrrole (4a–j); General Procedure:

To a solution of **1** (20 mmol) and *2* (1.96 g, 20 mmol) in MeCN (30 mL), freshly distilled acetic anhydride (2.04 g, 20 mmol) is added and the mixture is refluxed for 8 h, cooled and poured into ice-water (50 mL), The product is extracted with $CHCl_3$ (2 × 50 mL), dried (Na_2SO_4) and evaporated to give crude products, which are purified by filtering through silica gel column using hexane/EtOAc (9:1) as eluent and subsequently crystallized from $CHCl_3$.

Cyclization of 3*a*: 2-Ethyl-3-methylthio-4-phenyl-1,6-dioxo-2,3-dihydropyrano[3,4-*c*]pyrrole (4a); Typical Procedure:

To a solution of **3a** (3.20 g, 10 mmol) in acetonitrile (20 mL), freshly distilled acetic anhydride (2.04 g, 20 mmol) is added and the mixture is refluxed for 30 min, worked-up as described for **4a–j** to give crude **4a**, which on column chromatography over silica gel (hexane/EtOAc eluent 9:1) gives pure **4a**; yield: 2.7 g (92%) (mixed mp, superimposable IR and ^{1}H-NMR spectra).

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(1) Part 66 of the series on Polarized Ketene *S,S*- and *S,N*-acetals. Part 65: Singh, L.W., Ila, H., Junjappa, H. *J.Chem. Soc. Perkin Trans. 1*, in press.
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- Baldo, M.A., Chessa, G., Marangoni, G., Pitteri, B. *Synthesis* **1987**, 720. On p. 722, line 6, "degree of functionalization" should read "yield of binding". On the same page in the preparation of bis-hydrazone **5**, line 8, "solid product" should read "oil".

- Singh, L.W., Ila, H., Junjappa, H. *Synthesis* **1988**, 89. On p. 90 in the ^{1}H-NMR data for dioxime **4**, line 2, "N_2" should read "NH_2".

- Burger, K., Hübl, D., Geith, K. *Synthesis* **1988**, 194. On p. 196 in the table, for entries **4l**, **4m**, and **4n**, Y = O, and *Nu* = Cl, Br, and C_6H_5, respectively.

- Tolstikov, A.G., Khakhalina, N.V., Spirikhin, L.V. *Synthesis* **1988**, 221. In the title and abstract, benzyl esters should read benzyl ethers.

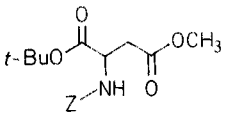
- Gupta, A.K., Ila, H., Junjappa, H. *Synthesis* **1988**, 284. Compounds **4** are 1,6-dioxo-1,2,3,6-tetrahydropyrano[3,4-*c*]pyrroles; compounds **9** are 1,6-dioxo-2,3,5,6-tetrahydro-1*H*-pyrrolo[3,4-*c*]pyridines.

- Keshavarz-K., M., Cox, S.D., Angus, R.O., Jr., Wudl, F. *Synthesis* **1988**, 641. On p. 642 the IR spectra shown in Figures 2 and 3 should be interchanged.

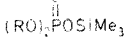
- Rodriguez, J., Waegell, B. *Synthesis* **1988**, 534. On p. 535, the first line of the general procedure should read: "DMAP (0.92 g, 7.5 mmol) and then α,β-unsaturated aldehyde **1** (0.1 mol)..."

- Zbiral, E., Drescher, M. *Synthesis* **1988**, 735. On p. 738 in the last procedure, the name for compounds **14** should read: (5-Oxo-5,6-dihydroimidazo[1,2-*c*]pyrimidin-3-yl)methylphosphonsäuren.

- Valerio, R.M., Alewood, P.F., Johns, R.B. *Synthesis* **1988**, 786. On p. 787 formula **2** should be:



Also on p. 787 in the reaction of **5** in the scheme on the right side, the reagent should be:



- Garrigues, B., Mulliez, M. *Synthesis* **1988**, 810. The title should read: Salts of *N*-(Sulfoalkyl)ureas and -thioureas.

- Yokoyama, M., Watanabe, S., Seki, T. *Synthesis* **1988**, 879. On p. 880 the name of compound **3a** in the first procedure should be azido(2-benzyloxyethoxy)methane.

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