Synthesis of *N*-Acetyl Derivatives of 17β-(2-Amino-oxazol-4-yl)-steroids and Revised Structure of *N*-Acetylated 4- or 4,5-Disubstituted 2-Amino-oxazoles

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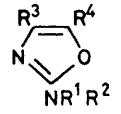
Chemical and spectroscopic data clearly demonstrate that all the title compounds are acetylated only at the exocyclic nitrogen.

THE synthesis of 17β-(2-amino-oxazol-4-yl)-steroids previously reported [1] has been suggested by the anti-inflammation activity of the 2-amino-oxazoles.[2] Results of pharmacological investigations, which will be reported elsewhere, prove that this biological activity is strengthened in 2-amino-oxazolylsteroids.

[1] G. Rapi, M. Ginanneschi, and M. Chelli, *J.C.S. Perkin I*, 1975, 1999.

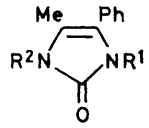
[2] (*a*) E. Marchetti, G. Mattalia, and V. Rosnati, *J. Medicin. Chem.*, 1968, **11**, 1092; (*b*) G. Crank and M. J. Foulis, *J. Medicin. Chem.*, 1971, **14**, 1075; (*c*) G. Crank, M. Neville, and R. Ryden, *J. Medicin. Chem.*, 1973, **16**, 1402.

The preparation of the title compounds has been carried out for analogous considerations. From 17β-(2-amino-oxazol-4-yl)-17α-hydroxyandrost-4-ene-3,11-dione [1] (1) we have obtained the related *N*-monoacetyl and *N*-diacetyl derivatives, (2) and (3). Problems arose in assigning the correct structures to these compounds, because of the controversial nature of the literature data. Thus, Crank [2b] has formulated the *N*-monoacetyl



	R^1	R^2	R^3	R^4
(2)	Ac	H	C	H
(3)	Ac	Ac	C	H
(4)	H	H	Me	Ph
(8)	Ac	H	Me	Ph
(9)	Ac	Ac	Me	Ph
(10)	Ac	H	Ph	Ph
(11)	Et	H	Ph	Ph
(12)	Ac	Ac	Ph	Ph
(13)	Ac	H	Me	H
(14)	Ac	Ac	Me	H
(15)	Ac	H	Me	Me
(16)	Ac	Ac	Me	Me

C = 17α-hydroxy-3,11-dioxoandrost-4-en-17β-yl.



	R^1	R^2
(5)	H	H
(6)	Ac	H
(7)	Ac	Ac

derivatives obtained from 4- or 4,5-substituted 2-amino-oxazoles as 2-acetylamino-compounds, although presenting no spectroscopic results. In contrast, Schuart and his co-workers,[3a] in discussing i.r. and ^{1}H n.m.r. data, have recently modified their earlier opinion,[3b] claiming that monoacetylation always affords 3-acetyl-2-imino-4-oxazolines and that the diacetyl derivatives are *endo,exo*-disubstituted.

Here the compounds examined are presented as 2-acetylamino- or 2-diacetylamino-oxazoles on the basis of the following results. From ref. 3*a* we deduce that Schuart's conclusions are mainly based on the following considerations: (*a*) the reaction between α-amino-propiophenone hydrochloride and cyanogen bromide in ether–aqueous sodium hydroxide affords a compound [m.p. 305 °C (decomp.), sealed tube, probably corrected],[3a] identified by the authors as 2-amino-4-methyl-5-phenyloxazole (4); (*b*) the ^{1}H n.m.r. data obtained from the diacetyl derivative of this substance show two signals at δ 2.6 and δ 2.68 ($CDCl_3$), attributed to two chemically non-equivalent acyl groups. Under the same experimental conditions, we have obtained a product that, on the basis of its m.p. [290—291 °C (decomp.), sealed tube, uncorrected] and of i.r. and u.v. data, appears to be the known isomer 4-methyl-5-phenyl-4-imidazolin-2-one (5),[4,5] rather than the compound (4), as stated in ref. 3*a*. ^{1}H N.m.r. data have confirmed the assigned structure: N(1)–H and N(3)–H signals lie at δ 10.2 and 10.05 [$(CD_3)_2SO$], respectively.

Monoacetylation of (5) is expected to lead to the 1- or the 3-substituted derivative. Nevertheless, on the basis of the ^{13}C n.m.r. data [$(CD_3)_2SO$; from $SiMe_4$] we were able to make a reasonable structural assignment to the product obtained; thus the signals at δ 114.7 and 116.7 for compound (5) (undecoupled spectra) can be assigned to C-4 and C-5, respectively; monoacetylation shifts the C-5 resonance of *ca.* 5 p.p.m. to lower field without affecting the C-4 signal. This compound can, therefore, reasonably be formulated as 1-acetyl-4-methyl-5-phenyl-4-imidazolin-2-one (6). Diacetylation of (5) afforded the expected 1,3-diacetyl-4-methyl-5-phenyl-4-imidazolin-2-one (7). It is worthy of note that ^{1}H n.m.r. ($CDCl_3$) of derivative (7) shows two resonances for the acyl protons which are coincident with the reported [3a] frequencies. All physicochemical and spectroscopic data (see Table and Experimental section) for (6) and (7) are in accordance with the assigned *N*-acetylated imidazolinone structure. Therefore, the reaction of an α-amino-ketone with cyanogen bromide, in ether–aqueous sodium hydroxide, does not unequivocally lead to 2-amino-oxazoles [3] but, in this case, afforded an imidazolinone. [The latter probably arises *via* cyanate formation, since compound (5) has been obtained from α-amino-propio-

^{1}H N.m.r. data (δ values from $SiMe_4$)

	C-2	C-4	C-5
(2) [a,*]	10.28br (N*H*, s) 2.33 (NAc, s)		7.29 (*H*, s)
(3) [b,*]	2.30 (NAc_2, s) [c]		7.64 (*H*, s)
(4) *	5.2br (NH_2, s)	2.24 (Me, s)	7.15—7.50 (Ph, m)
(8) *	10.57br (N*H*, s) 2.38 NAc, s)	2.38 (Me, s)	7.25—7.65 (Ph, m)
(9) *	2.35 (NAc_2, s) [c]	2.47 (Me, s)	7.30—7.70 (Ph, m)
(10) *	10.5br (N*H*, s) 2.10(NAc, s)	7.25—7.7 (2 × Ph, m)	
(11) *	5.84br (N*H*, t) [d] 3.39 (NCH_2Me, m) [e] 1.20 (NCH_2CH_3, t) [f]	7.1—7.8 (2 × Ph, m)	
(12) *	2.40 (NAc_2, s) [c]	7.3—7.8 (2 × Ph, m)	
(13) *	10.75br (N*H*, s) 2.30 (NAc, s)	2.12 (Me, d) [g]	7.17 (*H*, q) [g]
(14) *	2.28 (NAc_2, s) [c]	2.18 (Me, d) [g]	7.48 (*H*, q) [g]
(15) *	11.05br (N*H*, s) 2.27 (NAc, s)	2.04 (Me, q) [h]	2.20 (Me, q) [h]
(16) *	2.30 (NAc_2, s) [c]	2.12 (Me, q) [h]	2.27 (Me, q) [h]

	N-1	N-3	C-4	C-5
(5) †	10.2br (*H*, s)	10.05br (*H*, s)	2.13 (Me, s)	7.38 (Ph, m)
(6) †	2.56 (Ac, s)	10.8br (*H*, s)	2.30 (Me, s)	7.43 (Ph, s)
(7) [i,†]	2.59 (Ac, s)	2.52 (Ac, s)	2.06 (Me, s)	7.15—7.45 (Ph, m)

* In $CDCl_3$. † In $(CD_3)_2SO$.

[a] 17α-OH at δ 5.04 (s) [$(CD_3)SO$]. [b] 17α-OH at δ 5.28 (s) [$(CD_3)_2SO$]. [c] This signal is shifted to lower field (22—34 Hz) by adding Eu(fod)$_3$ (saturated solution). [d] Not well resolved; broad singlet, by irradiation at δ 3.39. [e] Quartet (*J* 7.4 Hz), by irradiation at δ 5.84 or by exchange with D_2O. [f] *J* 7.4 Hz. [g] *J* 1.3 Hz. [h] *J* 1 Hz. [i] δ 2.68, 2.59, 2.16, and 7.1—7.45 ($CDCl_3$).

[3] (*a*) J. Schuart, U. Wendt, and H. K. Mueller, *Pharmazie*, 1974, **29**, 763; (*b*) J. Schuart, H. K. Mueller, and U. Wendt, *Pharmazie*, 1974, **29**, 100.

[4] L. Behr-Bregowski, *Ber.*, 1897, **30**, 1515.

[5] T. Nischiwaki, T. Saito, S. Onomura, and K. Kondo, *J. Chem. Soc.* (*C*), 1971, 2644.

phenone and potassium cyanate,[4] although a rearrangement cannot be ruled out *a priori*.]

We obtained an authentic sample of compound (4) from 1-hydroxy-1-phenylpropan-2-one and cyanamide (in MeOH and aqueous ammonia). For this compound ^{1}H n.m.r. signals of the amino-group appear at δ 5.2 (s, 2 H) ($CDCl_3$). Moreover, the m.p. and all spectroscopic data are in agreement with the assigned structure. From (4) we obtained the monoacetyl and the diacetyl derivatives, suitably formulated as 2-acetylamino-4-methyl-5-phenyloxazole (8) and 2-diacetylamino-4-methyl-5-phenyloxazole (9), respectively The oxazolinic structure that had been previously assigned [3a] to the above compounds is ruled out for the following reasons. The i.r. (KBr) spectrum of (8) shows the amide I band at 1 715 cm^{-1}, the amide II and the oxazole ring stretchings occurring at 1 628, 1 586, and 1 538 cm^{-1}. Compound (9) shows (solid phase and solution) a characteristic doublet at 1 743 and 1 721 cm^{-1}, due to the diacetylamino-group.[6,7a] In the ^{1}H n.m.r. spectra ($CDCl_3$) of (8) the NH signal lies at δ 10.57 and the acyl group resonance at δ 2.38. Compound (9) shows a sharp singlet at δ 2.35 (6 H), easily attributed to 2 × $COCH_3$ resonances; a paramagnetic shift of 34 Hz with Eu(fod)$_3$ [7] (saturated solution) caused no splitting of this signal. Further, in the ^{13}C n.m.r. spectrum of (9) [$(CD_3)_2SO$] both $COCH_3$ resonances occur at δ 167.6 while the $COCH_3$ signals appear as a singlet at δ 23.6. These results are clearly incompatible with the assignment of an iminooxazoline structure and strongly support the oxazole structures.

By reduction of 2-acetylamino-4,5-diphenyloxazole (10), with borane–tetrahydrofuran complex,[8] the known 2-ethylamino-4,5-diphenyloxazole (11) [2a] was obtained; in the ^{1}H n.m.r. spectrum of (11) ($CDCl_3$) the multiplet at δ 3.39, due to the CH_2 protons, collapses into a well-resolved quartet by irradiation of the NH signal or by exchange with D_2O. This clearly confirms the oxazole structure of (10).

The monoacyl derivatives (13) and (15) and the diacetylated (12), (14), and (16), obtained from the parent 4- or 4,5-substituted 2-amino-oxazoles, have physicochemical and spectroscopic properties in good agreement with compounds (8) and (10) or (9), respectively (see Table and Experimental section). Consequently, all the acyl derivatives from simple 4- or 4,5-substituted 2-amino-oxazoles, investigated in this paper, must be formulated as 2-acetylamino- or 2-diacetylamino-oxazoles.

These conclusions can be extended to the monoacetyl (2) and diacetyl (3) derivatives of (1), as follows from examination of their i.r. and ^{1}H n.m.r. spectra, which exhibit diagnostic frequencies in close agreement with those of the non-steroidal oxazoles (see Table and Experimental section). For these compounds it is also possible to perform a complete assignment of the ^{13}C n.m.r. signals [$(CD_3)_2SO$] but here we will limit ourselves to noting that for compound (3) the $COCH_3$ signal appears at δ 170.5 and that for $COCH_3$ at δ 25.3. On this basis it is clear that the acetylation of 17β-(2-amino-4-oxazolyl)steroids occurs only at the exocyclic nitrogen.

[6] R. A. Abramovitch, *J. Chem. Soc.*, 1957, 1413.
[7] (*a*) O. Ceder and B. Beijer, *Tetrahedron*, 1975, **31**, 963; (*b*) R. von Ammon and R. D. Fischer, *Angew. Chem., Internat. Edn.*, 1972, **11**, 675.

EXPERIMENTAL

M.p.s (Thiele apparatus) are uncorrected. I.r. spectra were recorded on a Perkin-Elmer 457 spectrophotometer for KBr pellets, unless otherwise stated, ^{1}H n.m.r. spectra on a Perkin-Elmer R-32 instrument (90 MHz), and ^{13}C n.m.r. spectra on a JEOLCO ^{13}C FT n.m.r. system (PS/PFT-100) at 25.15 MHz [$(CD_3)_2SO$ solutions; $SiMe_4$ as internal standard]. $[\alpha]_D$ Values (95% EtOH) were measured with a Perkin-Elmer 141 polarimeter. T.l.c. were carried out on Merck silica gel 60 F_{254} plates (0.25 mm thick) in chloroform–methanol (10 : 1 v/v). Light petroleum used had b.p. 30—50 °C.

17β-(2-*Acetylamino-oxazol*-4-*yl*)-17α-*hydroxyandrost*-4-*ene*-3,11-*dione* (2).—Compound (1) (2.7 g, 7.02 mmol), prepared as in ref. 1, was dissolved in Ac_2O (72 ml) at 40—43 °C under nitrogen and then set aside overnight at room temperature. The solution was filtered into ice-cold water and vigorously stirred. The pH was adjusted to 7—7.5 with conc. ammonia. After 12 h at 0 °C the suspension was filtered to give 2.2 g (74%) of a light yellow *powder*. The product, crystallized from EtOAc, had m.p. 136—139 °C (decomp.) (Found: C, 67.4; H, 6.95; N, 6.25. $C_{24}H_{30}N_2O_5$ requires C, 67.6; H, 7.1; N, 6.55%), R_F *ca.* 0.6, $[\alpha]_D$ 128.1° (*c* 0.27), $\nu_{max.}$ 1 713 (broad) [C(11)=O and amide I], 1 660 (αβ-unsat. ketone), and 1 615—1 540 cm^{-1} (amide II, C=C and ω); δ_C 23.3 ($COCH_3$) and 167.6 ($COCH_3$).

17β-(2-*Diacetylamino-oxazol*-4-*yl*)-17α-*hydroxyandrost*-4-*ene*-3,11-*dione* (3).—Compound (1) (3.15 g, 8.19 mmol) in Ac_2O (161 ml) and anhydrous pyridine (50 ml) was set aside at 40 °C, under nitrogen, for 2 h. The mixture, poured into ice-cold water, with stirring, afforded 2.8 g (73%) of compound (3). The crude *product* was dissolved in ethyl acetate, Et_2O was added and the reddish precipitate filtered off. The mixture was then evaporated under reduced pressure and the residue dissolved in Et_2O (100 ml); a few drops of light petroleum were added and the small amount of solid obtained was centrifuged off. The pure compound was slowly precipitated by addition of light petroleum (*ca.* 200 ml) and cooling at 0 °C; it had m.p. 150—155 °C (decomp.) (Found: C, 66.45; H, 6.9; N, 5.8. $C_{26}H_{32}N_2O_6$ requires C, 66.65; H, 6.9; N, 6.0%), R_F *ca.* 0.7, $[\alpha]_D$ 136.3° (*c* 0.52), $\nu_{max.}$ 3 440 (OH), 1 740 and 1 720 (CO·N·CO), 1 710 [C(11)=O], 1 660 (αβ-unsat. ketone), and 1 615—1 560 cm^{-1} (C=C and ω); δ_C 25.3 (2 × $COCH_3$) and 170.5 (2 × $COCH_3$).

2-*Amino*-4-*methyl*-5-*phenyloxazole* (4).—To phenylacetylmethanol (1 g, 6.6 mmol), prepared by the method of Wren,[9] in methanol (20 ml) and conc. ammonia (3 ml), 0.554 g (13.2 mmol) of cyanamide and 0.011 g of boric acid, were added. After 1 h at room temperature, under nitrogen, the solution was concentrated to 1/3 volume under reduced pressure and water (10 ml) was added. The *precipitate* (0.64 g, 56%) was crystallized from EtOH–H_2O (50%); it had m.p. 150—152 °C (Found: C, 69.15; H, 5.8; N, 16.3. $C_{10}H_{10}N_2O$ requires C, 68.95; H, 5.8; N, 16.1%), $\nu_{max.}$ ($CHCl_3$) 3 500 and 3 418 (NH_2), and 1 640 (broad), 1 602, and 1 593 cm^{-1} (Ph, δNH_2, and ω).

[8] H. C. Brown and P. Heim, *J. Org. Chem.*, 1973, **38**, 912.
[9] H. Wren, *J. Chem. Soc.*, 1909, 1583.

4-Methyl-5-phenyl-4-imidazolin-2-one (5).—This compound was prepared according to the procedure used by Schuart [3a] to prepare his so-called 'isomer (4)'; it had m.p. 290—291 °C (decomp., sealed tube) [lit.,[3a] 305° (decomp., sealed tube, probably corrected); lit.,[4] 285—286 °C; lit.,[5] 285—287 °C (decomp.)] (Found: C, 68.8; H, 5.85; N, 16.0. $C_{10}H_{10}N_2O$ requires C, 68.95; H, 5.8; N, 16.1%); δ_C 114.7 (C-4) and 116.7 (C-5). I.r. data have been reported.[5]

1-Acetyl-4-methyl-5-phenyl-4-imidazolin-2-one (6).—To compound (5) (0.5 g, 2.87 mmol) suspended in anhydrous pyridine (10 ml) at 0 °C were added (2 h) AcCl (0.255 ml, 3.6 mmol) in distilled dimethylformamide (6 ml). The solution was then concentrated to *ca.* 8 ml and cooled overnight at 0 °C. The *precipitate* (0.15 g, 25%), recrystallized from MeOH–H_2O (1 : 1), had m.p. 186—187 °C (lit.,[3a] 189—190.5 °C) (Found: C, 66.95; H, 5.7; N, 12.95. $C_{12}H_{12}N_2O_2$ requires C, 66.65; H, 5.6; N, 12.95%), $\nu_{max.}$ 3 200—2 700 (NH) and 1 728 and 1 715sh cm^{-1} [N·CO and C(2)=O]; δ_C 114.7 (C-4), 121.5 (C-5), 25.9 ($COCH_3$), and 170.7 ($COCH_3$).

1,3-Diacetyl-4-methyl-5-phenyl-4-imidazolin-2-one (7).—This compound was prepared as reported in ref. 3*a*; it had m.p. 77—79 °C (lit.,[3a] 77.5—78.5 °C) (Found: C, 65.25; H, 5.55; N, 10.6. $C_{14}H_{14}N_2O_3$ requires C, 65.1; H, 5.45; N, 10.85%), $\nu_{max.}$ 1 756, 1 733, and 1 720sh cm^{-1} [2 × N·CO and C(2)=O]; δ_C 119.7 (C-4), 120.6 (C-5), 25.9 [N(1)–$COCH_3$], 170.1 [N(1)–$COCH_3$], 26.2 [N(3)–$COCH_3$], and 168.3 [N(3)–$COCH_3$].

2-Acetylamino-4-methyl-5-phenyloxazole (8).—To compound (4) (0.3 g, 1.72 mmol), Ac_2O (4 ml) was added; after 10 h at room temperature the solution was evaporated *in vacuo* to afford an oily residue which, washed with light petroleum, gave 0.22 g (59%) of a crude *product*; when crystallized from Et_2O this had m.p. 159—161 °C (Found: C, 66.65; H, 5.65; N, 12.6. $C_{12}H_{12}N_2O_2$ requires C, 66.65; H, 5.6; N, 12.95%), $\nu_{max.}$ 3 400—2 700 (amide NH), 1 715 (amide I), and 1 628, 1 605sh, 1 568, and 1 538 cm^{-1} (Ph, amide II, and ω); δ_C 23.6 ($COCH_3$) and 167.6 ($COCH_3$).

2-Diacetylamino-4-methyl-5-phenyloxazole (9).—Compound (4) (0.51 g, 2.93 mmol), in Ac_2O (7 ml), under nitrogen, was heated at 105 °C for 10 h. The solution was evaporated *in vacuo* and the crude product, dissolved in Et_2O, was precipitated by careful addition of light petroleum and filtering off of the first precipitate formed. Compound (9) (0.63 g, 83%) so obtained, sublimed at 70 °C and 0.1 mmHg and had m.p. 94—96 °C (Found: C, 65.45; H, 5.6; N, 10.9. $C_{14}H_{14}N_2O_3$ requires C, 65.1; H, 5.45; N, 10.85%), $\nu_{max.}$ 1 743 and 1 721 (CO·N·CO) and 1 618, 1 596, 1 579, and 1 566 cm^{-1} (Ph and ω); δ_C 25.4 (2 × $COCH_3$) and 171.1 (2 × $COCH_3$).

2-Acetylamino-4,5-diphenyloxazole (10).—From 2-amino-4,5-diphenyloxazole, prepared following the method of ref. 1 [m.p. 156—158 °C (CH_3CN); lit.,[3b] 159 °C (ligroin)], we obtained (10) as reported in ref. 3*b*; it had m.p. 178—180 °C (lit.,[3b] 181 °C), $\nu_{max.}$ 3 400—2 700 (amide NH), 1 713 (amide I), and 1 630—1 545 cm^{-1} (Ph, amide II and ω); δ_C 23.5 ($COCH_3$) and 167.4 ($COCH_3$).

2-Ethylamino-4,5-diphenyloxazole (11).—To compound (10) (2 g, 7.17 mmol) was added the borane–tetrahydrofuran complex (Aldrich) (1M; 22.5 ml), under dry nitrogen, and the solution was gently refluxed for 3—4 h. 2N-HCl was added (*ca.* 20 ml) and tetrahydrofuran was evaporated off under reduced pressure; the pH of the aqueous solution was adjusted to 8.5—9 with 8M-ammonia, and the mixture was cooled in ice. The white product [1.77 g, 99%; i.r. revealed *ca.* 5% of unchanged (10)], was sublimed at 120—130 °C and 0.1—0.5 mmHg, m.p. 139—141 °C (decomp.) (lit.,[2a] 144—146 °C) (Found: C, 77.15; H, 6.05; N, 10.55. $C_{17}H_{16}N_2O$ requires C, 77.25; H, 6.1; N, 10.6%), $\nu_{max.}$ ($CHCl_3$) 3 440 (NH) and 1 630 (broad), 1 602, and 1 595sh cm^{-1} (Ph and ω).

2-Diacetylamino-4,5-diphenyloxazole (12).—This compound was prepared as in ref. 3*a* and had m.p. 87—89 °C (from Et_2O) (lit.,[2b] 82—84 °C; lit.,[3a] 85—89 °C), $\nu_{max.}$ 1 750 and 1 725 (CO·N·CO) and 1 609, 1 595, 1 582, and 1 575 cm^{-1} (Ph and ω); δ_C 25.4 (2 × $COCH_3$) and 170.6 (2 × $COCH_3$).

2-Acetylamino-4-methyloxazole (13).—Prepared from 2-amino-4-methyloxazole,[1] as reported by Crank,[2b] this compound had m.p. 128—129 °C (lit.,[2b] 127—128 °C), $\nu_{max.}$ 3 400—2 700 (amide NH), 1 715 (amide I), and 1 620—1 555 cm^{-1} (amide II and ω); δ_C 23.3 ($COCH_3$) and 168.2 ($COCH_3$). When prepared following the method of Schuart,[3a] compound (13) had the same characteristics as those reported above.

2-Diacetylamino-4-methyloxazole (14).—To the parent amino-oxazole (6.1 g, 62 mmol) Ac_2O–pyridine (2 : 1) (47 ml) was added, and the solution was warmed to 45 °C for 1 h, under nitrogen. The solution was evaporated under reduced pressure to give 8 g (70%) of a light yellow *oil*, which was dissolved in Et_2O, treated with charcoal and distilled, b.p. 112 °C at 2.3 mmHg (Found: C, 52.5; H, 5.55; N, 15.55. $C_8H_{10}N_2O_3$ requires C, 52.75; H, 5.55; N, 15.4%). The purity was tested by g.l.c., with a 10% SE 30 (Anachrom 70—80 mesh) column, at 100 °C; $\nu_{max.}$ (film) 1 745 and 1 730 (CO·N·CO) and 1 608 and 1 575 cm^{-1} (ω); δ_C 25.0 (2 × $COCH_3$) and 171.0 (2 × $COCH_3$). Compound (14) prepared following Schuart's method [3a] exhibited the same analytical and spectroscopic behaviour. The product rapidly decomposed in the presence of oxygen at room temperature.

2-Acetylamino-4,5-dimethyloxazole (15).—2-Amino-4,5-dimethyloxazole (1 g, 9.8 mmol), prepared following the method in ref. 1 [m.p. 96—100 °C (decomp.); lit.,[10] 78—91 °C], and Ac_2O (3 ml) were warmed to 35 °C and the solution was allowed to reach room temperature. The solution, evaporated under reduced pressure, afforded an oil which rapidly crystallized and, after washing with Et_2O, gave 1.06 g (70%) of (15), recrystallizable from EtOAc, m.p. 127—129 °C (lit.,[2b] 128—129 °C), $\nu_{max.}$ 3 400—2 700 (amide NH), 1 715 (amide I), and 1 620—1 560 cm^{-1} (amide II and ω); δ_C 23.2 ($COCH_3$) and 167.5 ($COCH_3$).

2-Diacetylamino-4,5-dimethyloxazole (16).—This compound was prepared following Schuart's method [3a] from the parent 2-amino-oxazole (1.5 g, 8.9 mmol) in Ac_2O (57 ml), under nitrogen at 130—140 °C for 2 h. The solution was evaporated *in vacuo* and the crude *product* (1.5 g, 84%) was extracted with hot, light petroleum (b.p. 40—70 °C); the precipitate, collected at 0 °C, was recrystallized from Et_2O, freezing at −15 °C (the product decomposes in the presence of oxygen); it had m.p. 64 °C (decomp.) (Found: C, 55.25; H, 6.25; N, 14.2. $C_9H_{12}N_2O_3$ requires C, 55.1; H, 6.15; N, 14.3%), $\nu_{max.}$ 1 745 and 1 725 (CO·N·CO) and 1 645 and 1 578 cm^{-1} (ω); δ_C 25.2 (2 × $COCH_3$) and 170.8 (2 × $COCH_3$). A sample prepared from the monoacetyl derivative had the same characteristics.

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[10] V. Wolf, P. Hauschildt, and W. Loop, *Chem. Ber.*, 1962, **95**, 2419.