

Table 1 Measurements of the Deposition Velocity of Sulphur Dioxide on Grass

Date	Concentration $\chi(1) \mu\text{g m}^{-3}$	u_* m s ⁻¹	$u(1)$ m s ⁻¹	z_0 m	v_g m s ⁻¹		r s m ⁻¹	r_s s m ⁻¹
					Mean	Error		
Radioactive tracer method								
June 8, 1972		0.63	4.8	0.040	0.022	±0.0005	45	20
July 17, 1972		0.40	4.5	0.010	0.0036	±0.0003	280	230
August 29, 1972		0.40	4.1	0.014	0.0094	±0.0018	106	66
September 14, 1972		0.37	3.8	0.024	0.017	±0.002	59	11
October 18, 1972		0.38	3.8	0.026	0.0076	±0.0007	130	76
November 2, 1972		0.27	2.7	0.014	0.012	±0.0014	83	20
Gradient method								
November 22, 1972	12	0.29	3.3	0.0105	0.0079		130	65
November 22, 1972	21	0.21	2.3	0.0115	0.0069		150	64
December 13, 1972	36	0.29	3.3	0.0105	0.0086		110	53
December 21, 1972	34	0.053	0.60	0.012	0.0016		610	330
December 21, 1972	71	0.084	0.85	0.012	0.0025		400	220
January 11, 1973	20	0.25	2.7	0.012	0.0093		110	37
January 11, 1973	14	0.30	3.4	0.009	0.013		77	15
January 12, 1973	20	0.24	2.6	0.012	0.012		86	14
January 12, 1973	26	0.24	3.0	0.006	0.0073		140	58

tion of 5 Mton and more than twice the 0.7 Mton yr⁻¹ deposited by rain.

It is evidently desirable to extend the measurements reported here to a wide variety of surfaces, so that the influence of dry deposition on the long distance travel of sulphur dioxide may be determined. It is already clear, however, that dry deposition is an important mechanism for the removal of the gas from the atmosphere.

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Generation of Chemical Waves

A RECENT communication on the generation of spatial waves by the Zhabotinskii reaction¹, although reporting interesting experimental results, unfortunately propagates a serious error originally perpetrated by Busse². This implies that periodic variations in space are possible for a simple linear autocatalytic reaction when diffusion of the autocatalytic species is taken into account. The steady state form of the equation in question is

$$D \frac{d^2c}{dz^2} + Kac = 0 \quad (1)$$

where c is the concentration of autocatalytic species C , and a is the concentration (assumed constant) of another reactant A . The general solution of this equation is

$$c = C_0 \sin(2\pi z/\lambda + \phi) \quad (2)$$

where C_0 and ϕ are arbitrary constants and

$$\lambda = 2\pi(D/Ka)^{1/2}$$

In both refs. 1 and 2 boundary conditions are ignored; but

it is obvious that a sink for C (non-zero gradient) must be postulated at the walls of the container if a steady solution is to be possible, in order to compensate for the autocatalytic production of C within the volume. Otherwise there would be an explosion. In fact equation (2) has long been known as representing the free radical concentration in a chain branching system with heterogeneous wall termination³. Bursian and Sorokin³ did not, however, interpret the sinusoidal form of the solution as representing waves of any kind because they realized that the only physically acceptable solution is one which is positive throughout the container, if it is to represent a concentration. Thus equation (2) is a physically acceptable solution only when the container dimension is less than or equal to half a wavelength; otherwise negative concentrations intrude. The sinusoidal solution then simply represents a distributed concentration for the species C and has no connexion with chemical waves at all. The same criticism applies to Rastogi and Yadava¹ except that they have transformed (incorrectly incidentally) into moving coordinates.

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Crystallographic Evidence for Ade-AdeH Hydrogen-bonded Pairs in a Cobalt-Adenine Complex

INTEREST in the role of metal ions in the biochemical reactions of nucleotides and nucleic acids¹ has led us to study the isolation of solid metal complexes with nucleotides and their bases, and to perform X-ray structural studies on suitably crystalline materials. In this way unequivocal information can be obtained concerning the preferred coordination sites of a given metal ion and also concerning the important question of hydrogen-bonding interactions in these systems. We report here the isolation of a crystalline complex of cobalt (II) sulphate with adenine (Ade) and details of its crystal structure.