COMPONENTS:	ORIGINAL MEASUREMENTS:
1. Methane; CH_4; [74-82-8] 2. Phospholipids	Miller, K. W.; Hammond, L.; Porter, E. G. *Chem. Phys. Lipids* 1977, *20*, 229-241.
VARIABLES:	PREPARED BY: C. L. Young

EXPERIMENTAL VALUES:

T/K = 298.4 t/°C = 25.2

96 mole per cent egg phosphatidylcholine
+ 4 mole per cent egg phosphatidic acid sonicated vesticles

Bunsen coefficient 0.20

68.2 mole per cent egg phosphatidylcholine
+ 2.8 mole per cent egg phosphatidic acid sonicated vesticles
+ 29 mole per cent cholesterol

Bunsen coefficient 0.18

AUXILIARY INFORMATION

METHOD/APPARATUS/PROCEDURE:	SOURCE AND PURITY OF MATERIALS:
Samples of lipids were prepared as a translucent aqueous suspension containing up to 32 mg/ml of phospholipids. Samples saturated with gas at ambient pressure and then analysed by stripping out gas. Gas so obtained was analysed by gas chromatography using helium as a carrier gas and a Poropak Q column. Details in source. Bunsen coefficient calculated from experimental data on lipid solution and of pure water.	1. Matheson Gas Products sample, purity 99 mole per cent. 2. Grade 1 samples from Lipid Products, Nutford, England.
	ESTIMATED ERROR: $\delta T/K = \pm 0.05$; $\delta p/kPa = \pm 0.5\%$; $\delta\alpha/\alpha = \pm 8\%$ (estimated by compiler).
	REFERENCES:

COMPONENTS:	ORIGINAL MEASUREMENTS:
1. Methane; CH_4; [74-82-8] 2. Rabbit brain and blood and saline solution.	Ohta, Y.; Ar, A.; Farhi, L.E. *J. Appl. Physiology*, 1979, *46*, 1169-1170.
VARIABLES:	PREPARED BY: C.L. Young

EXPERIMENTAL VALUES:

T/K	Bunsen coefficient, α	No. of animals
	"Saline"	
310.15	0.0256 ± 0.0003	5
	Blood	
310.15	0.0334 ± 0.0002	5
	Brain	
310.15	0.0361 ± 0.0004	5

The partial pressure of methane was not given but was considerable less than one atmosphere.

AUXILIARY INFORMATION

METHOD/APPARATUS/PROCEDURE:

Saline, rabbit blood and brain were saturated by passing humidified gas through three vessels in series. Brain was prepared by manually squeezing out blood from the brain of a freshly killed rabbit. Volume of brain determined by saline displacement. The tissue was homogenised and diluted with an equal volume of 5% low foam detergent. Blood sample was heparinized. Samples of each of the three solutions were analysed by GC using helium carrier gas, a molecular sieve column and a thermal conductivity detector.

SOURCE AND PURITY OF MATERIALS:

See under method.

ESTIMATED ERROR:

$\delta T/K = \pm 0.1$

REFERENCES:

COMPONENTS:	ORIGINAL MEASUREMENTS:
1. Methane; CH_4; [74-82-8] 2. Dog blood and skeletal muscle	Meyer, M.; Tebbe, U.; Püper, J. *Pflügers. Arch.* 1980, *384*, 131-4.
VARIABLES:	PREPARED BY: C. L. Young

EXPERIMENTAL VALUES:

T/K = 310 P/kPa = 101.3

Solvent	No. of determinations	No. of dogs	Bunsen Coefficient	S[a]
Water [b]	12	-	0.0260	11.47 ± 0.09
Saline [c]	12	-	0.0232	10.20 ± 0.10
Blood	50	10	0.0260	11.44 ± 0.30
Plasma	30	10	0.0227	9.99 ± 0.21
Red cells	-	10	0.0300	13.21 ± 0.47
Muscle	39	13	0.0271	11.95 ± 0.40

[a] Solubility in units of μmol dm^{-3} kPa^{-1}.

[b] Data also reported in ref. (1).

[c] Normal saline containing 0.154 mol/dm^3 (water).

(cont.)

AUXILIARY INFORMATION

METHOD/APPARATUS/PROCEDURE:	SOURCE AND PURITY OF MATERIALS:
Method involved equilibration of solvent with humidified gas at stated temperature and pressure and subsequent estimation of the amount of gas dissolved in a 2.5 cm^3 sample. The gas dissolved was estimated using an equilibration technique for partial extraction of gas. Quantitative analysis of extracted gas was performed by GC using helium as carrier gas. Details in ref. (1).	1. No details given.
	ESTIMATED ERROR: δT/K = ±0.5 (estimated by compiler).
	REFERENCES: 1. Meyer, M. *Pflügers. Arch.* 1978, *375*, 161.

COMPONENTS:

1. Methane; CH_4; [74-82-8]

2. Dog blood and skeletal muscle

ORIGINAL MEASUREMENTS:

Meyer, M.; Tebbe, U.; Püper, J.

Pflügers. Arch.

1980, *384*, 131-4.

EXPERIMENTAL VALUES:

Heparinized blood samples were from mongrel dogs (fasting for 16 hrs).

Plasma obtained by centrifugation of whole blood. No sign of hemolysis was observed.

Solubility in red cells was calculated from the values for whole blood and plasma of the same animal by volume-weighted subtraction.

Muscle was gastrocnemius muscle excised from dogs, which had been anesthetized for about 6-8 hr and killed by bleeding. Blood allowed to drain from major vessel. Muscle samples homogenized.

Composition of dog blood (mean values ± SD)

Hematocrit %	45 ± 4.5
Hemoglobin (g/100 ml blood)	16.9 ± 1.6
Plasma protein (g/100 ml plasma)	6.2 ± 0.5
Total lipids (mg/100 ml plasma)	519 ± 118
Triglycerides (mg/100 ml plasma)	108 ± 82
Cholesterol (mg/100 ml plasma)	202 ± 68

COMPONENTS:	ORIGINAL MEASUREMENTS:
(1) Methane; CH_4; [74-82-8] (2) Olive oil	Campos-Carles, A.; Kawashiro, T.; Piiper, J. *Pflugers Arch.* 1975, *359*, 209-18.
VARIABLES: $T/K = 310.15$	**PREPARED BY:** H. L. Clever

EXPERIMENTAL VALUES:

Temperature $t/^0C$	Temperature T/K	Solubility Coefficient /μmol $dm^{-3}mmHg^{-1}$	Mol Fraction $10^3 x_1$
37	310.15	16.0 ± 0.1	11.8

The compiler calculated the mole fraction solubility at 101.325 kPa partial pressure methane (760 mmHg).

An olive oil molecular weight of 884 and a density of 0.8979 were used. See Battino, R.; Evans, F. D.; Danforth, W. F. *J. Am. Oil Chem. Soc.* 1968, *45*, 830.

AUXILIARY INFORMATION

METHOD/APPARATUS/PROCEDURE:

Used a tonometer and extraction apparatus as described by Farhi (ref 1,2), and gas chromatography.

The solubility value is the mean of 8 determinations ± standard error.

SOURCE AND PURITY OF MATERIALS:

(1) Methane. Source not given. Sample stated to be 99.9 or better purity.

(2) Olive oil.

ESTIMATED ERROR:

REFERENCES:

1. Farhi, L. E. *J. Appl. Physiol.* 1965, *20*, 1098.

2. Farhi, L. E.; Edwards, A. W. T.; Homma, T. *J. Appl. Physiol.* 1963, *18*, 97.

COMPONENTS:	ORIGINAL MEASUREMENTS:
(1) Methane; CH_4; [74-82-8] (2) Rat abdominal muscle	Campos Carles, A.; Kawashiro, T.; Piiper, J. *Pflugers Arch.* 1975, *359*, 209-18.
VARIABLES: T/K = 310.15	PREPARED BY: H. L. Clever

EXPERIMENTAL VALUES:

Temperature $t/^0C$	Temperature T/K	Solubility Coefficient /μmol dm^{-3} $mmHg^{-1}$	Bunsen Coefficient α/cm^3(STP) cm^{-3} atm^{-1}
37	310.15	2.25 ± 0.11 2.42 (corrected)	0.0412

Solubility coefficient the mean of 10 measurements ± standard error.

In another paper (ref 1) the authors report diffusion coefficients of CH_4 in rat skeletal muscle at 37 ^0C.

Krogh's diffusion constant

$10^9 K/mmol\ min^{-1}\ cm^{-1}\ mmHg^{-1}$ = 1.27 ± 0.03

Diffusion coefficient

$10^6 D/cm^2\ s^{-1}$ = 8.72

AUXILIARY INFORMATION

METHOD/APPARATUS/PROCEDURE:

The methane, saturated with water vapor, was led through an equilibration chamber for 2 h at a rate of 8 ml m^{-1} . The muscle sample rested on a screen in the chamber sothat it was exposed to the gas on all sides.

After equilibration the muscle sample was transferred to an extraction chamber filled with room air for the same length of time as the gas equilibration. The gas in the chamber was forced into a gas chromatograph by mercury entering the chamber.

Correction factors were applied for unextracted gas and gas lost during transfer between chambers.

SOURCE AND PURITY OF MATERIALS:

(1) Methane. Source not given. Stated to be better than 99.9 per cent pure.

(2) Rat abdominal muscle. A flat muscle sheet of about 1.6 g, 1.4 mm thickness, and 10 cm^2 area was excised from rats weighing 250 to 430 g.

ESTIMATED ERROR:

REFERENCES:

1. Kawshiro, T.; Campos Carles, A. Perry, S. F.; Piiper, J. *Pflugers Arch.* 1975, *359*, 219.