wild inductions which result in torn-up equipment and exhausted personnel.

Summary

The tests indicate that electrodes composed of palladium, gold or carbon are superior to those made of silver, in the production and maintenance of electronarcosis in dogs. Palladium has been selected for routine work on electronarcosis. Also described is a rigid electrode holder for use on the dog. Its performance has been satisfactory in routine use.

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Ostwald Solubility Coefficients for Anesthetic Gases in Various Fluids and Tissues

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DURING the course of investigation into the solubility of halothane in blood and body tissues and its role in halothane uptake and distribution,[1] we had frequent occasion to refer to previously determined solubilities of other anesthetic gases. It became apparent, however, that no comprehensive table of solubility coefficients for anesthetic gases in various media at several temperatures existed in the literature.

As a consequence, extensive exploration of the literature on this subject permitted compilation of such a table for a number of anesthetic gases. The table is organized in a manner identical to that used in the *Handbook of Respiration* for oxygen and carbon dioxide.[2] All Bunsen coefficients have been corrected to Ostwald coefficients at the temperature of the experiment in degrees centigrade.[3]

We do not purport that this table contains all solubility coefficients which have been determined for the anesthetic gases listed. Several of the earliest investigators did not appreciate the need for equilibration between liquid and gas phase and hence their results are highly questionable and not perpetuated in this table. References to their work can be found in the International Critical Tables.[4] Solubility values for halothane are not included in this table since these have been tabulated in a previous paper.[1] Reprints of this table are available upon request.

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Ostwald Solubility Coefficients for Gases in Various Fluids and Tissues

Medium	Source	Temp. of Experiment °C.	*A* Ethylene	*B* Nitrous Oxide	*C* Cyclopropane	*D* Chloroform	*E* Diethyl Ether	*F* Divinyl Ether	*G* Trichloro-Ethylene	Reference
1. Water		40	0.073			1.6				*A*, 1; *D*, 2
2.		39			0.189					*C*, 3
3.		38		0.435						*B*, 4
4.		37.5	0.081	0.44	0.204		15.8			*A*, 5; *B*, 6; *C*, 6; *E*, 7
5.		37.5	0.09							*A*, 6
6.		37				3.8	15.61	1.40	1.55	*D*, 1; *E*, 8; *F*, 9; *G*, 10
7.		37						1.32		*F*, 11
8.		35			0.229					*C*, 12
9.		35			0.208					*C*, 3
10.		35			0.106					*C*, 13
11.		30	0.088	0.50		4.17	20			*A*, 1; *B*, 14; *D*, 14; E, 14
12.		30	0.098							*A*, 14
13.		25	0.118	0.599	0.281					*A*, 15; *B*, 15; *C*, 3
14.		20	0.108	0.630	0.315	7.7			3.0	*A*, 1; *B*, 16; *C*, 3; *D*, 1; *G*, 10
15.		20	0.124		0.296	5.9				*A*, 16; *C*, 16; *D*, 17
16. 0.9% NaCl		35			0.214					*C*, 12
17. Whole blood	Man	38		0.486	0.470					*B*, 4; *C*, 3
18.		37.5	0.140	0.47	0.457					*A*, 18; *B*, 6; *C*, 6
19.		37.5		0.472						*B*, 15
20.		37		0.460	0.415	10.3	14.9		9.15	*B*, 19; *C*, 20; *D*, 1; *E*, 7; *G*, 10
21.		36			0.492					*C*, 3
22.		20							20	*G*, 10
23.	Cattle	40	0.088							*A*, 1
24.		37				8.1	14.9			*D*, 1; *E*, 7
25.		25		0.52						*B*, 20
26.		20	0.130		0.503					*A*, 16; *C*, 16
27.	Pig	40	0.105							*A*, 1
28.		37				14				*D*, 1
29.	Dog	38			0.513					*C*, 3
30.		37.5	0.160							*A*, 5
31.		37		0.482			15.2			*B*, 19; *E*, 8
32.		36			0.532					*C*, 3
33.		20			0.608					*C*, 3
34.	Rabbit	37.5	0.145							*A*, 5
35. Plasma or Serum	Man	40				7.3				*D*, 1
36.		37				9.1				*D*, 1
37.		20							17	*G*, 10
38.	Cattle	40	0.069							*A*, 1
39.		37				7.4				*D*, 1
40.		25		0.52						*B*, 20
41.	Pig	40	0.070							*A*, 1
42.		37				8.9				*D*, 1
43. Oil	Olive	37.5			6.99		50			*C*, 6; *E*, 6
44.		37.5			11.2					*C*, 21

Ostwald Solubility Coefficients for Gases in Various Fluids and Tissues (*Continued*)

Medium	Source	Temp. of Experiment ° C.	*A* Ethylene	*B* Nitrous Oxide	*C* Cyclopropane	*D* Chloroform	*E* Diethyl Ether	*F* Divinyl Ether	*G* Trichloroethylene	Reference
45.		37	1.28	1.40		265	50.2	58†		*A*, 14; *B*, 17; *D*, 17; *E*, 17; *F*, 9
46.		35			10.35					*C*, 13
47.		20				400				*D*, 17
48.		17				470				*D*, 17
49.	Cod liver	37.5			7.05					*C*, 6
50.	Paraffin	37.5			7.13					*C*, 6
51.	Sesame	20	1.60	1.5	11.14					*A*, 16; *B*, 16; *C*, 16
52. Lipid Suspension	Dog blood	37.5	0.136							*A*, 5
53. Heart*	Man	37	1.0	1.13						*A*, 22; *B*, 23
54.	Dog	37				1.0				*D*, 24
55. Brain	Man	37	1.2	1.06						*A*, 22; *B*, 19
56.	Dog	37		1.03		1.0	1.14			*B*, 19; *D*, 25; *E*, 26
57.		37				1.4				*D*, 24
58.		37				1.45†				*D*, 27
59. Lung	Man	37		1.0			1.0			*B*, 28; *E*, 28
60. Liver	Dog	37				0.9				*D*, 25
61.	Rabbit	35			1.36†					*C*, 12
62. Kidney	Dog	37				1.25				*D*, 27
63.		37				0.97				*D*, 24
64. Muscle	Rabbit	35			0.91†					*C*, 12

* For tissue, coefficient $= \frac{\text{Tissue Solubility}}{\text{Blood Solubility}}$.

† Calculated from published data

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BODY TEMPERATURE With careful measurements of temperature, significant differences were found between the esophagus, rectum, and selected subcutaneous and muscular sites before induction of anesthesia. Significant drops in temperature occurred at each of the sites studied following induction of anesthesia. Temperature drops were greater during deep anesthesia than during analgesia-muscle relaxant anesthesia. Esophageal temperature was not superior to rectal temperature as indicator of temperature changes at other sites. A marked fall in diaphragmatic temperature occurred when the chest was opened. Possible effects of the observed temperature changes on the duration and intensity of action of muscle relaxants is emphasized. *(Smith, N. T.: Subcutaneous, Muscle, and Body Temperatures in Anesthetized Man, J. Appl. Physiol. 17: 306 (Mar.) 1962.)*

EQUIPMENT STERILIZATION Diseases can be transmitted from patient to patient by anesthesia equipment. All masks, breathing tubes, breathing bags, airways, endotracheal tubes, metal connectors, laryngoscopes, etc., are sterilized with ethylene oxide after each use. Sterility is maintained by enclosing these parts in cellophane. Soda lime canisters and dome valves are sterilized once per week. No adverse reactions in 16,000 cases, or in personnel handling the equipment in two years of use, have been experienced. *(Snow, J. C., Mangiaracine, A. B., and Anderson, M. L.: Sterilization of Anesthesia Equipment with Ethylene Oxide, New Engl. J. Med. 266: 443 (Mar. 1) 1962.)*