TABLE 1

CONTACT SPRAY AND SYSTEMIC ROOT ABSORPTION ACTIVITY OF ORGANIC PHOSPHORUS COMPOUNDS

Compound	Contact Approx. LD_{50} g/100 ml			Systemic LD_{50} ppm*	Mammalian, acute oral LD_{50} mg/kilo	
	Pea aphid	2-Spotted mite	Housefly		Mice	Rats
Diethyl 2-chlorovinyl phosphate	0.09	0.05	0.02	0.75	30.5	7.0
Dimethyl 1-carbomethoxy-1-propen-2-yl phosphate	0.002	0.008	0.008	0.75	9.0	4.0
Systox	0.001	0.006	0.1	1.5	—	8.0
OMPA	0.07	0.1	> 5.0	25.0	—	13.5

* Parts toxicant per million parts water.

Laboratory contact spray tests with these compounds have been run using pea aphids, *Macrosiphum pisi* (Kalt.), and adult houseflies, *Musca domestica* L., in addition to 2-spotted mites. The mammalian toxicity for diethyl 2-chlorovinyl phosphate and dimethyl 1-carbomethoxy-1-propen-2-yl phosphate was determined by Kodama, Morse, and Hine (*2*). A figure for OMPA was taken from Lehman (*3*) and that for Systox was supplied by the manufacturer.

Contact, systemic, and mammalian toxicity data are given in Table 1. It may be seen that the new compounds showed extremely high systemic activity, moderate to high contact activity, and mammalian toxicities approximately equal to those of Systox and OMPA.

TABLE 2

FUMIGATION ACTIVITY TO RED FLOUR BEETLE, *Tribolium castaneum*, AT 25.5° C

Compounds	Space fumigation		Grain fumigation	
	Dose	Results	Dose	Results
	ml/500-ml flask	% mortality, 24 hr	ml/2-qt jar	% mortality, 24 hr
Diethyl 2-chlorovinyl phosphate	0.0001	100	0.0012	88
			0.005	100
Dimethyl 1-carbomethoxy-1-propen-2-yl phosphate	0.0004	35	0.0012	52
	0.0015	90	0.005	100
Chloropicrin	—	—	0.004	0
	—	—	0.015	100
Methyl bromide	—	—	0.004	2
	—	—	0.015	100

The space fumigation effects of these compounds were determined in 500-ml glass flasks against the red flour beetle, *Tribolium castaneum* (Herbst). To determine the effects in grain, the same species was used in 2-qt jars filled with barley. Results are summarized in Table 2. These data indicate high activity of the compounds as space fumigants and a greater activity for the compounds as grain fumigants than is obtained with either chloropicrin or methyl bromide.

References

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The Hydrogen Ion Concentration of Human Fetal Blood in Utero at Term

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Recent studies of the acid-base and electrolyte status of newly born infants have reinforced the impression that these infants maintain equilibria substantially different from those of the adult (*1*). The outstanding differences are a lower pH in the blood and a lower CO_2 content in the plasma.

The investigations of Noguchi (*2*) concerning the pH of the infant's blood at birth make it clear that acidosis is present at that time. They do not, however, demonstrate whether this acidosis is a consequence of labor or maintenance of in utero conditions. pH data are at present available on only 5 infants in utero (*3, 4*). The values on 4 of these (*4*) vary widely, include contradictory differences and are based on calculation rather than direct mensuration. It, therefore, appeared desirable to measure the pH of the blood of the human fetus in utero at term.

Blood samples were obtained at the time of elective Cesarean section at term. The mothers received a variety of preanesthetic medications, followed by local infiltration anesthesia. Maternal blood samples were procured from a peripheral and from a uterine vein. The uterine incision was made and the umbilical cord only delivered. Fetal blood samples were then taken simultaneously from umbilical artery and vein. Oiled, heparinized syringes were employed, and after filling were capped and placed in ice.

pH determinations were made by means of a glass electrode as soon as possible after sampling. Samples

[1] pH determinations were done through the cooperation of E. B. Brown of the Department of Physiology and J. D. MacCarthy of the Department of Laboratory Medicine.

TABLE 1

pH OF BLOOD SAMPLES

	Maternal peripheral vein	Maternal uterine vein	Umbilical vein	Umbilical artery
1†	7.36	7.36	7.31	7.22
2	*	7.34	7.34	7.29
3	7.38	7.38	7.32	7.24
4	7.37	7.34	7.31	7.24
5	7.39	7.36	7.31	7.27
6	7.34	7.32	7.31	7.22
7	7.40	7.34	7.32	7.25
8	7.39	7.39	7.35	7.28
9	7.42	7.42	7.31	7.27
10	*	*	7.30	7.25
11	7.37	*	7.32	7.29
12	7.37	7.35	7.34	7.30
Mean	7.38	7.36	7.32	7.26

* Unsatisfactory sample.

† In the first mother and fetus studied, the values obtained were respectively 7.36, 7.32, 7.01, and 6.98. The order of magnitude and range of subsequent observations indicate that these fetal values belong to a different universe of data. Intrauterine fetal embarrassment, in the presence of which Eastman noted similarly low fetal pH values, was not present. There is neither clinical nor technical explanation at present for the extreme deviation of this one set of data, and therefore, it is not included in the table.

were identified to the person doing the determination by number only. Two different electrodes were employed, one in a water bath, and the other in an incubator, each with a different galvanometer system. There was no difference in the mean or range of the 2 sets of values. Each system was sensitive to less than 0.005 pH unit.

The results are presented in Table 1. The mean pH of umbilical vein blood is 7.32, and that of umbilical artery blood, 7.26. These values are almost identical with those of Noguchi, obtained on infants at birth. It is, therefore, certain that the human infant in utero at term exists in a state of acidosis relative to its mother. This may not be altered by normal labor. Since the umbilical artery in utero carries a mixed arterial-venous blood, it is likely that the acidosis in fetal tissues at term is of a degree hitherto unsuspected and sufficient to affect gas exchange and alter metabolic processes significantly.

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Comments and Communications

Scientific Conferences and Papers

A COMMUNICATION by Paul F. Klens in SCIENCE (117, 112 [1953]) had some excellent advice on the preparation of papers for scientific meetings and their delivery. I add some comments and suggestions. Lantern slides should not have any details that cannot be read easily with the unaided eye, when held in the hand before a light. There should not be more than 26 lines of typed material single spaced, and a line should not have more than 65 letters or figures.

There is a curious expression of self-consciousness in the deplorable tendency to take rear seats and leave front seats vacant, thus adding to the difficulty of hearing a weak-voiced speaker and of seeing details in badly planned slides.

Local committees on arrangements often fail to consider the acoustic properties of rooms used for meetings. Voice amplifiers should be used in large rooms, if obtainable. It has been my observation that failure to provide them is often not because they are not available, but is simply due to thoughtlessness or negligence. When a microphone is provided, it should be used. It is silly vanity to scorn such devices, as often happens. A thoughtful speaker realizes that an audience will probably have one or more members whose hearing is not keen. Furthermore, a speaker is apt to overestimate the volume of his voice. His voice may not be so loud as he thinks or his articulation may not be good. In rooms seating one hundred or more persons, an amplifier is helpful, especially if there are street noises that enter the room, or if there is noisy apparatus in adjacent rooms.

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Adrenal Weight—Body Weight

IN connection with the third and fourth sentences of the paper "The Relation of Adrenal Weight to Body Weight in Mammals" by John C. Christian (SCIENCE, 117, 78 [1953]), I call your attention to our several publications on these relationships. My paper "A Comparison of Certain Gland, Organ and Body Weights in Some African Ungulates and the African Elephant" (*Growth*, 2, 335–346 [1938]), expressed these relations graphically on a log-log grid. It was shown that the equation $Y = bX^k$ is applicable.

A second paper, "The Scale of Being and the Power Formula" (*Growth*, 5, 301–327 [1941]), gave the b values for the adrenal gland resulting from the application of the above equation. That paper included adrenal data from the following: 167 reptiles; 220 birds; 1212 domestic, even-toed ungulates; 79 odd-toed ungulates; 86 carnivores; and 251 primates, mostly wild and exclusive of man.