In a search for a chemically defined compound with Xerosin-like activity various synthetics with anti-inflammatory activity were evaluated. MER-27 showed most promise and was extensively investigated. Its activity in suppressing pneumonia more closely paralleled that of Xerosin. However, certain advantages over Xerosin stood out: 1. MER-27 was effective by oral route; Xerosin was not. 2. Xerosin introduced into lungs caused pneumonia which could be arrested by MER-27 or Xerosin itself. MER-27 was unable to cause lung consolidation. 3. MER-27 was a synthetic compound. A recent report(5) that a derived pyrimido-pyrimidine was active in suppressing pneumonia was not borne out in our tests. At most, this compound showed only a borderline activity which according to our criteria would have been regarded as negative.

Our results demonstrate ability of MER-27 to suppress non-bacterial pneumonia in mice. Other activities of this compound will be reported.

Summary. An organic synthetic compound, MER-27, suppresses pneumonia in mice induced by influenza virus when given parenterally or orally. The compound has no effect on viral multiplication. MER-27 also suppresses pneumonia induced by *Escherichia coli* endotoxin. MER-27 does not enhance viral infection and therefore closely resembles Xerosin in its action.

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Nitrous Oxide Solubility in Fetal and Uterine Tissues in Human Pregnancy.* (24673)

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The formula $\left(CBf = \frac{V_u S}{\int_{t_0}^{t} (A-V)\,dt} \right)$ devised by Kety and his co-workers(1) to calculate cerebral blood flow contains in its numerator a factor (S) which refers to the ratio of N^2O dissolved per g of brain to that dissolved per cc of blood at a constant N^2O tension and at 37°. In adopting this formula for measurement of uterine blood flow in human pregnancy(2), the factor S was taken empirically as equal to unity, a value which had been found experimentally for the brain. Others(3) have determined this factor on homogenates of a whole fetus but the age and condition of the fetus were not given and the values for each type of tissue were not known. Because of the variety of tissues contained in a pregnant uterus, it was deemed essential to determine this factor for each individual fetal tissue as well as for the myometrium and placenta. In this way, not only the N^2O technic for measuring blood flow to the pregnant uterus would be better substantiated but also solubility of N^2O in the various fetal tissues would be known.

Method. Samples of fetal tissues varying in weight from 2 to 10 g were obtained immediately after death from one 5 months immature fetus (therapeutic abortion), one 8 months premature fetus and one full term fetus. The latter 2 fetuses died shortly after delivery for no obvious reasons. The tissues studied are listed in Table I. Samples of myometrial tissue were obtained from patients undergoing cesarean section and placental tissues were collected from spontaneously delivered pregnancies. Each sample weighed accurately, homogenized, equilibrated

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TABLE I. Solubility of N^2O in Human Fetal and Uterine Tissues at 37° and at N^2O Tension of 760 mm Hg.

Tissue	α N^2O (per g tissue)	$\frac{\alpha \text{ Tissue}}{\alpha \text{ Blood}}$
Spleen	.589	1.430
Skel. muscle	.473	1.148
Skin	.458	1.112
Liver	.377	.915
Brain	.439	1.065
Heart	.496	1.204
Lung	.432	1.048
Scalp	.327	.798
Placenta	.331	.803
Umbilical cord	.333	.808
Uterine muscle	.472	1.145
Mean	.430	1.043

with N^2O, and its Bunsen solubility coefficient (α) was calculated according to the technic of Kety *et al.*(1). From 5 to 8 determinations of Bunsen coefficient were made for each type of tissue. Variations from one determination to another did not exceed 1% ($\pm$.003).

Results. Table I lists Bunsen solubility coefficients (α) of all fetal tissues studied and of uterine tissue. Placenta, umbilical cord and scalp had the lowest solubility coefficient for N^2O while the spleen had the highest. Average value for solubility coefficients of all the fetal tissues and of uterine muscle was 0.430. There was no significant difference between values obtained from the immature, premature and full term fetuses.

The tissue-blood partition coefficient for N^2O (S factor) varied from 0.798 for the scalp to 1.430 for the spleen, average 1.043.

Discussion. The present data indicate that the N^2O solubility coefficient varies considerably from one fetal tissue to another, but is the same whether the fetus is immature or at full term. It has been stated that N^2O solubility depends a great deal on the fat content of a given tissue(1). Whether the difference observed in the present studies was due to a difference in fat content of the various fetal tissues cannot be stated. At any rate, in considering the pregnant uterus as a whole, and for the purpose of applying the N^2O technic for uterine blood flow measurement, the mean for all the tissues involved is the most important. This mean was 0.430 which gave a partition coefficient for pregnant uterus and blood of 1.043. These figures are very close to those obtained from homogenates of a whole fetus and myometrium, and also close to the value of unity given to factor (S) in study of uterine blood flow. Therefore, the error due to this factor in the previous data (2) is insignificant.

Summary and conclusion. 1) N^2O solubility in fetal tissues was studied in one immature, one premature and one full term fetus. 2) Bunsen coefficient varied from one tissue to another. The mean for all tissues including placenta, cord and myometrium was 0.430. These figures give a N^2O partition coefficient between whole pregnant uterus and blood of 1.043.

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Effect of Sudden Time Displacement by Air Travel on Synchronization of Adrenal Function. (24674)

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Very few data are available on the effect of sudden change in geographic position on periodicity of physiological functions. Therefore, a study was undertaken on the effect of an airplane trip from Minneapolis, Minn. to Tokyo, Japan, and to Seoul, Korea, with a prolonged stay in Seoul.

Materials and methods. Departure from