patients' sera when tested with either antigen. While slight differences were found in the antibody titers of certain sera when tested with the two antigens, these were neither sufficiently great nor consistent enough to enable one to differentiate between human psittacosis and lymphogranuloma venereum by this method.

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## Influence of Lowered Barometric Pressure on the Electroencephalogram.

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Although it is well established that a lowering of the barometric pressure accompanied by a reduction in oxygen tension produces profound changes in the electroencephalogram (EEG), little is known about the effects of reduction in barometric pressure *per se*. In general, it has been found that sensory functions which are very sensitive to anoxia are not altered by reduction in barometric pressure when the oxygen tension is kept at normal levels (*cf.* the review by Gellhorn and Hailman).[1] On the other hand, it has been reported that the cerebro-spinal fluid pressure may increase considerably even at relatively low altitudes. Armstrong[2] thinks that this increase in cerebro-spinal pressure is due to a liberation of nitrogen in gas form. Bergeret and Giordan[3] showed that a rise in cerebro-spinal pressure occurs only at such altitudes in which the oxygen tension is considerably below normal. In view of the fact that alterations in cerebro-spinal fluid pressure may affect the EEG (Forster and Nims)[4] a study of the effect of lowered barometric pressure on the EEG seems to be of interest.

The experiments were performed on 20 unanesthetized male rats which were kept singly in an atmosphere of 100% oxygen. The pressure was reduced in one minute to a level of 130 mm Hg and then maintained for 5 minutes; then the normal atmospheric conditions were restored. In a second control series, the rats were subjected to the same pressure changes in air. The EEG was recorded as in previous investigations (Gellhorn and Kessler).[5]

*Results.* Uniform results were obtained in 6 animals showing that even this extremely rapid lowering of the barometric pressure to 130 mm Hg did not cause any significant changes in the EEG of rats (*cf.* Fig. 1) nor was there any distinct change in behavior. If, however, the pressure was lowered to the same barometric level in the presence of air (6 experiments), the brain waves were completely abolished (Fig. 2). The experiments indicate that at least in rats the changes in EEG observed under conditions of lowered barometric pressure are solely due to a lowering of the oxygen tension. This conclusion is further supported by the evidence that if the barometric pressure is lowered below 130 mm Hg in an atmosphere of oxygen changes in behavior and EEG occur which are typical of anoxia. Results as illustrated in Fig. 3

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1 Gellhorn, E., and Hailman, H., *Federation Proc.*, 1943, **2**, in press.

2 Armstrong, H. G., *Principles and Practice of Aviation Medicine*, Baltimore, 1939, Williams and Wilkins Company.

3 Bergeret, P., and Giordan, P., *J. de Physiol. et de Path. Gen.*, 1938, **36**, 1050.

4 Forster, F. M., and Nims, L. F., *Arch. Neurol. and Psychiat.*, 1942, **47**, 449.

5 Gellhorn, E., and Kessler, M., *Am. J. Physiol.*, 1942, **136**, 1.

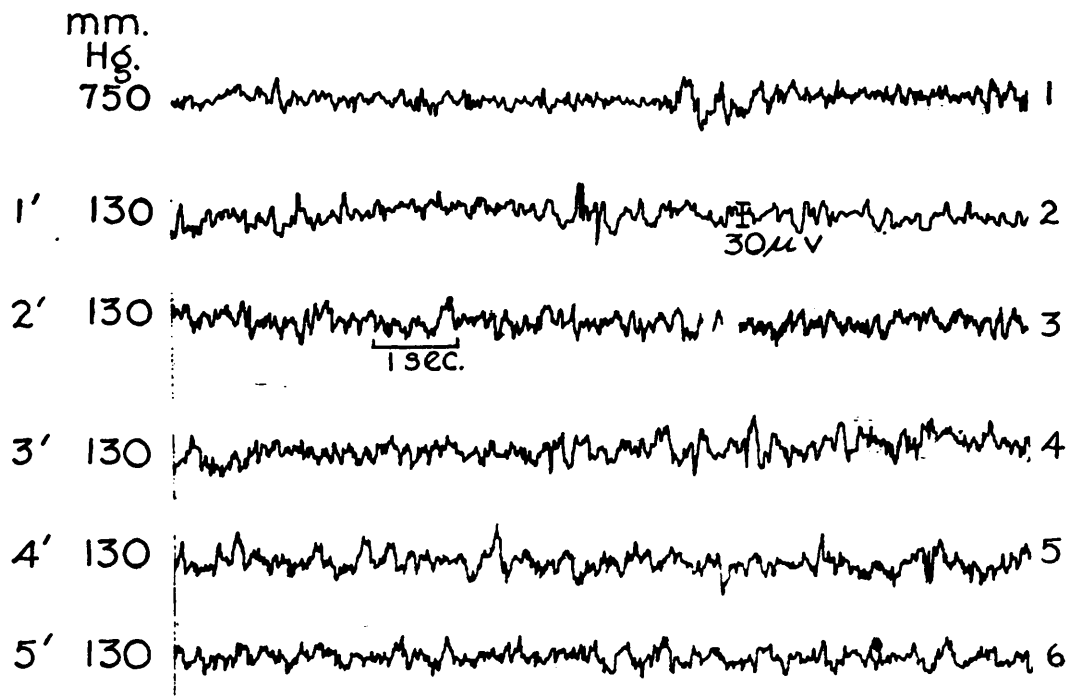


FIG. 1.

The effect of lowering barometric pressure to 130 mm Hg on the EEG of the rat in the presence of 100% oxygen. The pressure was reduced to 130 mm Hg in one minute and the rat was kept at this level for 5 minutes.

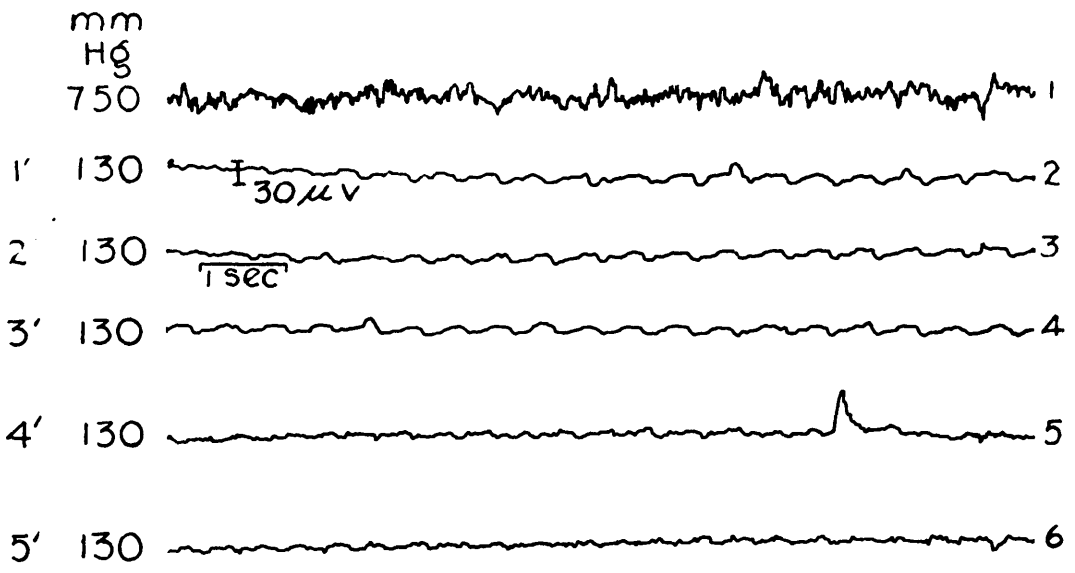


FIG. 2.

The effect of lowering barometric pressure to 130 mm Hg in the presence of air.

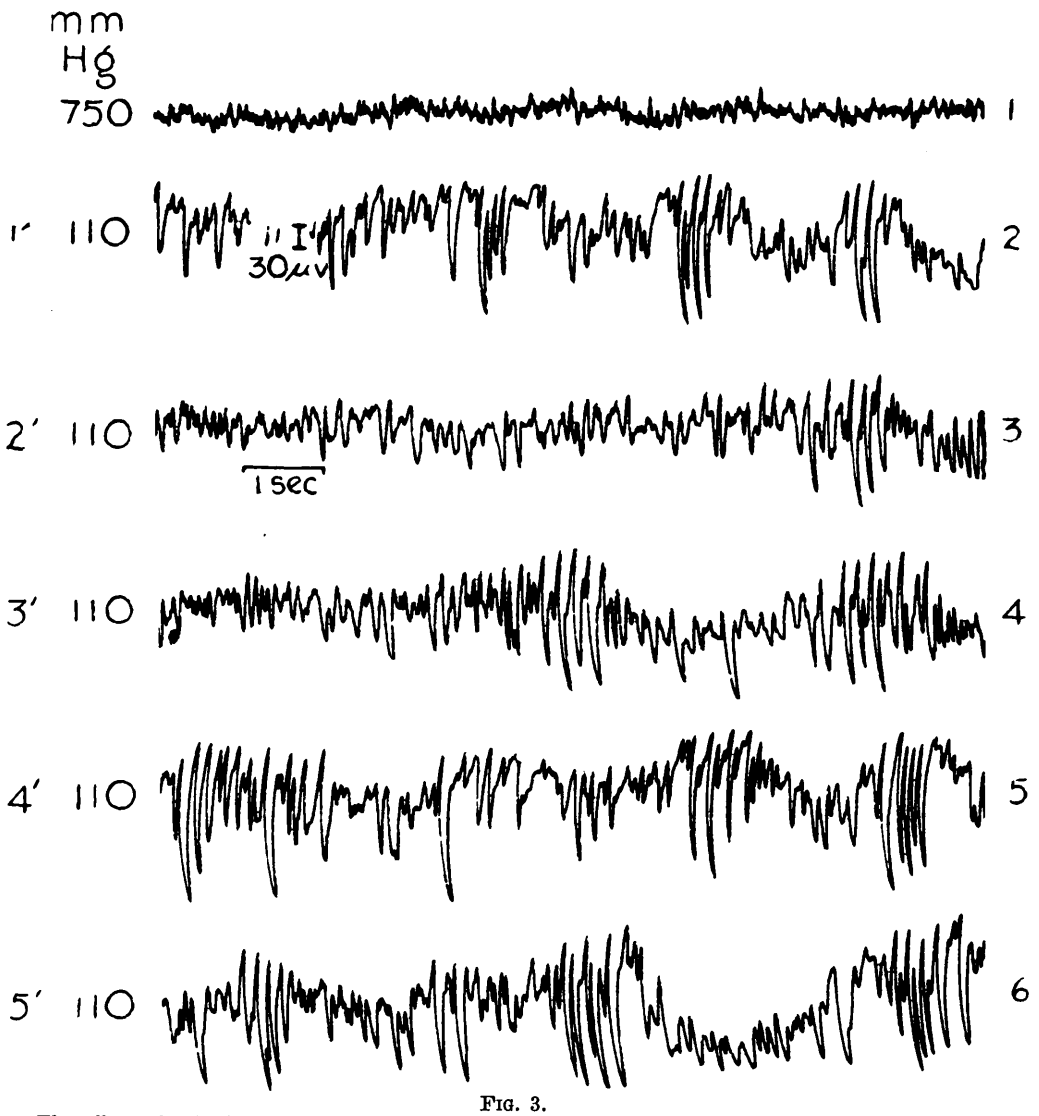


FIG. 3.
The effect of reducing the barometric pressure to 110 mm Hg in the presence of 100% oxygen.

were obtained in 8 animals. At a pressure of 110 mm (in the presence of 100% oxygen) very large potentials of a frequency of 6 to 12 per second occurred in groups (spindles). They are identical with spindles observed in rats which were exposed to similar reductions in oxygen tension by a lesser lowering of the barometric pressure in the presence of air instead of 100% oxygen.[6] In both conditions the occurrence of spindles is accompanied by a general depression of the animal (absence of spontaneous movements).

*Summary.* Experiments on unanesthetized rats show that rapid lowering of the barometric pressure to 130 mm Hg in 100% oxygen is not accompanied by any changes in the EEG although cortical potentials are abolished at this level in air. Further reduction in the barometric pressure leads in the presence of 100% oxygen to anoxic changes similar to those observed in the low pressure chamber in air at lesser altitudes.

[6] Unpublished observations.