

It should be mentioned that formerly strains of L organism directly isolated from the lungs of rats were maintained in the same kind of broth, but in these cultures the streptobacilli never appeared. Klieneberger recently pointed out that the strains directly isolated from the lesions are different both in their morphology and serological specificity from the strains isolated from the streptobacilli. The latter strains are serologically similar to the streptobacilli. Thus, the failure to cultivate the streptobacilli from the strains directly cultured from the lesions is not unexpected. Furthermore, the marked difference between the 2 groups of L strains in itself is rather against the symbiosis hypothesis. It is improbable that the symbiosis would so profoundly alter the properties of the strains.

The occurrence of such remarkable variation as the L organism in bacterial cultures is of considerable importance. For this reason caution is necessary in interpreting the observation. In a subsequent report observations will be presented and discussed showing that various groups of bacteria show more or less similar phenomena, thus supporting the conclusion that the L organism is a variant of the bacillus rather than a symbiont.

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Effect of Acute Anoxia Produced by Breathing Nitrogen, on the Course of Schizophrenia.

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Previous work has led us to believe that a common factor in the hypoglycemic and metrazol treatments for schizophrenia is a diminished cerebral metabolism. The mechanism for the production of the decreased metabolism is different for each treatment. During hypoglycemia the cerebral metabolism diminishes because the brain is deprived of its chief substrate, glucose.¹ After the injection of metrazol, on the other hand, the inhibition of cerebral metabolism is evidently due to an acute anoxemia induced by the severity of the convulsions and the temporary arrest of respiration.²

¹ Himwich, H. E., Bowman, K. M., Wortis, J., and Fazekas, J. F., *Science*, 1937, **86**, 271.

² Himwich, H. E., Bowman, K. M., Fazekas, J. F., and Orenstein, L. L., *Proc. Soc. Exp. Biol. and Med.*, 1937, **37**, 359.

If the beneficial results following metrazol therapy are dependent upon decreased cerebral metabolism resulting from acute anoxia, then anoxia of a similar degree, produced by any means should be equally effective. It occurred to us that acute anoxemia might be produced under safer and more controllable conditions by having the patients breathe for short periods an atmosphere in which the nitrogen was increased at the expense of oxygen. By this method it is possible not only to control the degree of anoxemia produced but also to terminate the bout immediately in the event of untoward reaction.

The production of acute anoxemia was under the direction of one of us, F.A.D.A., a trained anesthetist. The apparatus used included a tight fitting face mask with exhalation valve such as is used in anesthesia, a canister of soda lime and a 5-liter breathing bag connected in series. The apparatus was filled with pure oxygen, adjusted to the patient's face and after a few breaths, nitrogen was run into the mask gradually, displacing the oxygen. Unlike previous attempts of other workers the anoxia was intense. At the height of the bout the patient was respiring almost pure nitrogen. Carbon dioxide did not accumulate but was absorbed by soda lime, thus minimizing the patient's discomfort during the treatment.

As anoxemia became progressively more severe the usual signs, respiratory stimulation, tachycardia, rising blood pressure, cyanosis, neurological changes, *i. e.*, opisthotonos, convulsive jerkings and extensor and torsion spasms appeared. At the point when it was felt that more severe or prolonged anoxemia would jeopardize the patient's safety the bout was terminated suddenly by introducing pure oxygen into the mask. Consciousness returned immediately and with the exception of occasional headache there have been no complicating sequelæ.

Five patients with schizophrenia were so treated 3 times a week; 2 for approximately 4 months and one, 2 months and 2 more for about a month. One of the 3 patients who received the treatment longest has been discharged in full remission, and is still feeling well being entirely free from delusional formations. The other 2 are improved though still hospitalized. One of the patients receiving the treatment for only one month has begun to show improvement. An interesting phenomenon—all 3 patients of the first group were more disturbed, restless and apprehensive when due to circumstances treatment was stopped for a week. The delusions and hallucinations reappeared in one patient and persecutory ideas returned in another patient during the interval. These symptoms subsided when treatment was reestablished.

Since our therapy simulates metrazol treatments it may be well to compare the two. The present procedure insures a greater depletion of the oxygen saturation of the blood than does the metrazol. With metrazol the hemoglobin saturation may decrease to 40%, while with our treatment the hemoglobin saturation was 30% or lower, going down to 15%. Despite a degree of anoxemia more profound than that attained with that of metrazol the patient is nevertheless under control of the anesthetist, thus insuring greater safety.

Though our experience is limited with this treatment of schizophrenia, the results are encouraging. Many more data must be accumulated before conclusions can be drawn. Nevertheless, the results with anoxia do suggest that a profound diminution of cerebral metabolism produced by this technic exerts favorable effect in the course of schizophrenia.

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Causes of the Discontinuity of Growth of Fibroblasts Cultivated in Embryo-Juice.

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Fibroblasts that are cultivated according to the flask-technic in a plasma-coagulum with embryo-juice as nutrient fluid do not proliferate continuously. Generally after 2 or 2½ weeks' cultivation the cells stop multiplying, although only a small portion of the coagulum is covered with tissue. If a part of the tissue is transferred to a new coagulum, growth is resumed. If it is not so transferred the cells degenerate. Investigators who have attempted to find the cause for this cessation of growth and subsequent degeneration of the cells have attributed it either to changes that take place in the physical structure of the plasma-coagulum, or to the accumulation of toxic products therein.¹ The experiments reported here were

¹ Ephrussi, B., *Arch. d'Anat. Micros.*, 1933, **29**, 95; Fischer, A., *Cytologia*, 1930, **1**, 217, and *Virchow's Arch. Path. Anat. u. Physiol.*, 1930, **279**, 94; Mayer, E., *Arch. f. Entwich. Mech.*, 1933, **130**, 382; *Compt. Rend. Soc. Biol.*, 1935, **119**, 422; Olivo, O. M., *Arch. f. Exp. Zellforsch.*, 1931, **11**, 261.