Glucose has the expected effect of raising the R. Q. in all cases except those of uterine muscle from animals injected for more than 70 hours. In these cases it is lowered slightly.

A more noticeable influence of glucose is the inhibitory effect it has on the $Q_{O_2}$ of both endometrium and muscle from the 24-hour injected animals. The inhibition averaged about 20%. After 24 hours, oxygen consumption was practically the same with and without glucose.

The values of the anaerobic glycolysis follow a pattern similar to those for the changes in oxygen consumption. The average value for uteri from untreated animals is 6.1 ($Q_G^{N_2}$), the peak at 60 hours is 11.5, and the plateau at 90 hours and beyond is about 9.25.

These results show the direction and magnitude of the effect which estrogen has on the respiratory metabolism of uterine tissue. A further analysis to find the point of action of estrogen in the respiratory cycle should be possible, perhaps with the aid of inhibitors of specific respiratory enzymes or enzyme systems.

## 13461 P

## Encephalitis Virus "Antibody" in Sera of Experimentally Infected Animals by Agglutination of Virus-Coated Cells.

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Details of the technic involved in satisfactorily coating bacterial cells with encephalitis virus and the agglutination of such cells by the sera of encephalitis patients have been given in a previous report[1] wherein the test was designated as the bacterial agglutination (B.A.) method of detecting serum antibody. That encephalitis virus was actually adsorbed onto the bacteria was indicated by the infectivity of 'coated' cells for susceptible animals even after repeated washing to remove extraneous virus. The specific nature of the agglutination reaction with patients' serum was demonstrated by certain control tests wherein the reaction did not occur when non-coated cells or cells coated with normal mouse brain were used. Further, sera from cases of clinically recognized poliomyelitis were studied which did not agglutinate cells coated with encephalitis virus although they were

[1] Roberts, E. C., and Jones, L. R., PROC. SOC. EXP. BIOL. AND MED., 1941, 47, 75.

capable of agglutinating in high titer poliomyelitis virus-coated cells. And further, a high specificity was indicated by the ability of mouse-brain containing encephalitis virus as well as bacterial cells coated with this material to remove the agglutinating factor from the sera of encephalitis patients; while on the other hand, normal mouse brain or bacterial cells coated with normal mouse brain failed to remove the factor.

The application of this method to the detection of 'antibodies' in the blood serum of monkeys and hamsters experimentally infected with the virus of St. Louis encephalitis is the basis of the present report.

In Table I are given the results of the application of this method to the sera of hamsters wherein it will be noted that positive B.A. tests have been observed as early as the second day following inoculation with the virus of St. Louis encephalitis. Since this agglutinating factor has not been observed in the serum of normal animals, we presume that the B.A. titer of 1:10 observed in the case of animal No. 11 is related to the inoculation of virus 2 days previously. In the case of hamster No. 14, which survived for a considerable period of time, positive B.A. reactions with significant serum titers persisted for several weeks.

In Table II are recorded the results observed in the sera of 2 monkeys experimentally infected with St. Louis encephalitis virus. Serum samples taken from these animals before inoculation failed

TABLE I.

Serum Titers, Based upon Agglutination of Virus-coated Bacteria (the B. A. Method), in Hamsters Inoculated with St. Louis Encephalitis Virus.*

| Hamster No. | Route of inoculation | Days, post-inoculation | B.A. titer |
|---|---|---|---|
| 1 | Normal | Control | Neg. |
| 2 | " | " | " |
| 3 | Intracerebral | 4 | 64 |
| 4 | " | 4 | 128 |
| 5 | " | 5 | Neg. |
| 6 | " | 19 | 16 |
| 7 | Intranasal | 5 | Neg. |
| 8 | " | 5 | 32 |
| 9 | " | 6 | 32 |
| 10 | " | 7 | 64 |
| 11 | Subcutaneous | 2 | 10 |
| 12 | " | 6 | 32 |
| 13 | " | 8 | 20 |
| 14 | " | 12 | 64 |
| " | " | 42 | 32 |
| " | " | 49 | 64 |
| " | " | 56 | 64 |
| " | " | 70 | 32 |

*Serum samples supplied by Dr. G. O. Broun.

TABLE II.
Serum Titers, Based upon Agglutination of Virus-coated Bacteria (B.A. Method), in Monkeys *(M. rhesus)* Inoculated with St. Louis Encephalitis Virus.*

| | B.A. SL Enceph. virus | Temp. °F | Symptoms | B.A. SL Enceph. virus | Temp. °F | Symptoms |
|---|---|---|---|---|---|---|
| Pre-inoculation | Neg. | 102.6 | — | Neg. | 104.0 | — |
| | (Intracerebral Inoculation) | | | (Intranasal Inoculation) | | |
| Post-inoculation, days | | | | | | |
| 2 | 32 | 101.8 | — | 32 | 103.0 | — |
| 5 | 8 | 103.4 | + | 16 | 104.0 | — |
| 7 | 8 | 106.0 | ++++ | 64 | 104.6 | — |
| 8 | 32 | 105.0 | ++++ | | | |
| 9 | 16 | 105.6 | ++ | 32 | 104.0 | + |
| 11 | 16 | 102.4 | + | 64 | 105.3 | ++++ |
| 13 | | 103.6 | + | 32 | 104.6 | ++++ |
| 19 | | 103.8 | — | 32 | 104.0 | — |

*Serum samples supplied by Dr. G. O. Broun.

to elicit the B.A. reaction while serum samples obtained 48 hours post-inoculation were capable of agglutinating encephalitis virus-coated cells. Later samples taken during the course of the disease showed a significant rise in titer. The agglutinating factor appeared 4 days prior to the onset of symptoms in the case of the animal inoculated by the intracerebral route, and 7 days prior to symptoms in the case of the intranasally inoculated animal.

The early appearance of an agglutinating factor in the experimentally infected animal, which can be detected by this very sensitive technic, suggests the possible application of the method as a diagnostic aid in neurotropic virus infection of man and it is conceivable that a particular merit of the method may be its ability to detect the factor very early in the course of the disease.