

sorbed by dysentery bacilli (Shiga). Using this serum, kindly supplied to us by Eisler, we were able to confirm fully these interesting observations. Furthermore we found that after absorbing the serum with cells of the sub-group A<sup>1</sup> the supernatant fluid agglutinated most cells of sub-group A<sup>2</sup>, O, and probably B, distinctly more strongly than those of sub-group A<sup>1</sup>, in a similar way as certain exceptional human sera.<sup>4</sup> Whether this is a singular occurrence or can be reproduced with other dysentery sera is being investigated.

## 5285

The Oligodynamic Haemolytic and Haemagglutinative Properties of Some of the Heavy Metals.

SANFORD B. HOOKER.

*From the Department of Immunology, Evans Memorial, Boston.*

An accidental observation that HgCl<sub>2</sub> in high dilution was powerfully lytic for erythrocytes suspended in an isotonic medium led to the collection of data concerning the effect of many of the commoner salts in concentrations ranging from 0.01M to 0.0000003M. Progressively doubled dilutions in 0.85% NaCl solution were mixed with equal quantities of washed human cells in 2% suspension, placed, with a fragility test, in a water bath at 37°C. for 1 hour and read finally after some 20 hours' refrigeration at 8°C. The effect of the active salts was decidedly more in evidence at the 20 hour than at the 1 hour reading. The positive results recorded do not pretend to quantitative accuracy because of the considerable variations sometimes observed in repeated tests with cells of slightly different fragility.

Some salts were tested also with sheep and with rabbit cells; the latter were rather more sensitive to lysis and were involved in a peculiar phenomenon that was not observed with the other 2 types of erythrocytes. In the weakest partially effective lytic dilutions of the mercury salts the unhemolyzed cells were gathered in a tough film.

The hemolytic effect of the mercurials was surprisingly little diminished by the presence of even an excessive quantity of serum in the isotonic diluting medium.

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<sup>4</sup> Landsteiner, K., and Levine, Philip, *J. Immunol.*, 1929, **17**, 8, 11.

Figure 1 shows the nature, extent, and zonal qualities of the positive effects observed. In the higher concentrations many salts produced discoloration which is not here recorded.

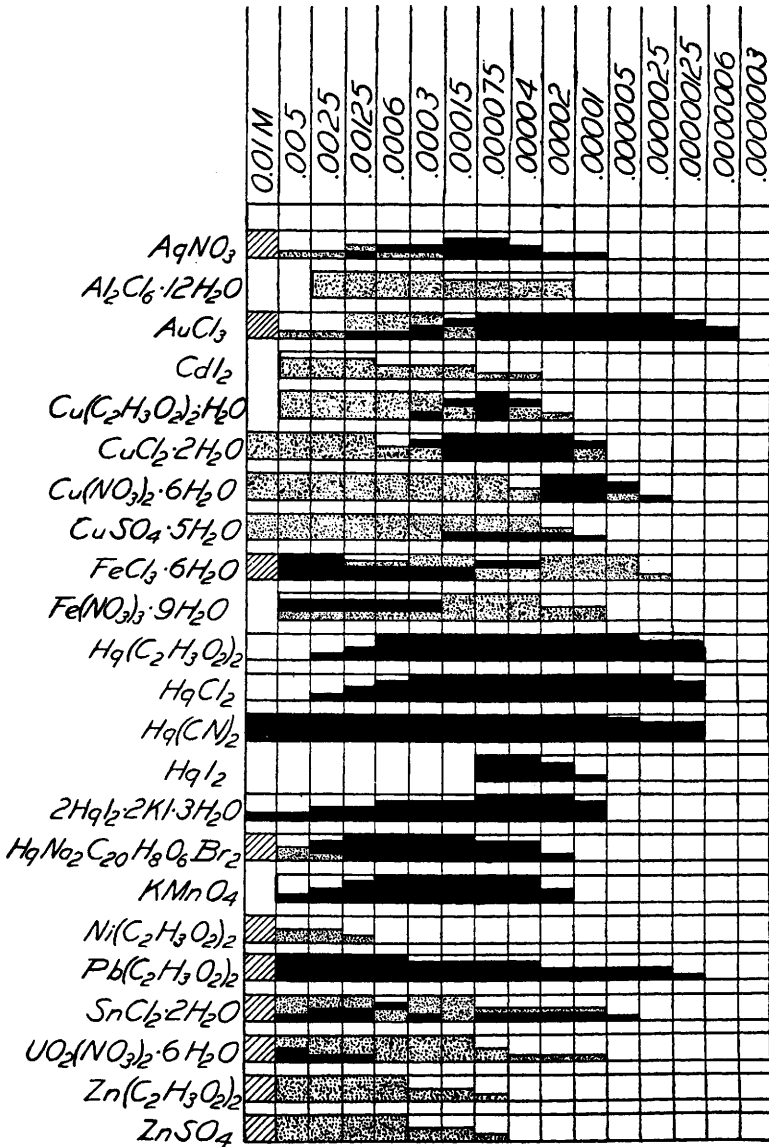


FIG. 1.

Black areas represent lysis; stippled, agglutination; blank, no visible change; barred, not tested. The varying heights of the black and stippled areas indicate degrees of reaction—from partial to complete.

Negative results were obtained with colloidal gold,  $\text{BaCl}_2 \cdot 2\text{H}_2\text{O}$ ,  $\text{CaCl}_2$ ,  $\text{Co}(\text{NO}_3)_2 \cdot 6\text{H}_2\text{O}$ ,  $\text{FeSO}_4(\text{NH}_4)_2\text{SO}_4 \cdot 6\text{H}_2\text{O}$ ,  $\text{K}_3\text{AsO}_4$ ,  $\text{KAsO}_2$ ,  $\text{KCl}$ ,  $\text{KCN}$ ,  $\text{K}_2\text{C}_2\text{O}_4 \cdot \text{H}_2\text{O}$ ,  $\text{K}_2\text{CrO}_4$ ,  $\text{K}_4\text{Fe}(\text{CN})_6 \cdot 3\text{H}_2\text{O}$ ,  $\text{KHCO}_3$ ,  $\text{K}_2\text{HPO}_4$ ,  $\text{KI}$ ,  $\text{KIO}_3$ ,  $\text{KNO}_3$ ,  $\text{K}_3\text{PO}_4$ ,  $\text{K}_2\text{SO}_4$ ,  $\text{K}_2\text{S}_2\text{O}_8$ ,  $\text{Li}_2\text{CO}_3$ ,  $\text{Li}_2\text{SO}_4$ ,  $\text{MgCl}_2 \cdot 6\text{H}_2\text{O}$ ,  $\text{MgSO}_4$ ,  $\text{MgSO}_4 \cdot 7\text{H}_2\text{O}$ ,  $\text{NaBO}_2$ ,  $\text{Na}_2\text{B}_4\text{O}_7 \cdot 10\text{H}_2\text{O}$ ,  $\text{NaF}$ ,  $\text{Na}_2\text{Fe}(\text{CN})_5\text{NO} \cdot 2\text{H}_2\text{O}$ ,  $\text{Na}_2\text{HPO}_4 \cdot 12\text{H}_2\text{O}$ ,  $\text{NaNO}_2$ ,  $\text{Na}_2\text{S}_2\text{O}_3 \cdot 5\text{H}_2\text{O}$ ,  $\text{Na}_2\text{WO}_4 \cdot 2\text{H}_2\text{O}$ ,  $\text{NH}_4\text{Br}$ ,  $\text{NH}_4\text{C}_2\text{H}_3\text{O}_2$ ,  $\text{NH}_4\text{Cl}$ ,  $(\text{NH}_4)_2\text{CO}_3 \cdot \text{H}_2\text{O}$ ,  $(\text{NH}_4)_2\text{C}_2\text{O}_4 \cdot \text{H}_2\text{O}$ ,  $\text{NH}_4\text{NO}_3$ ,  $(\text{NH}_4)_2\text{SO}_4$ .

These observations may be of some interest possibly to students of toxicology, antiseptics, chemotherapy, permeability and allied basic problems.

## 5286

### On the Almost Instantaneous Transport of Spermatozoa Through the Cervix and the Uterus in the Rat.

CARL G. HARTMAN AND JOSEPHINE BALL.

(Introduced by Herbert M. Evans.)

*From the Department of Embryology, Carnegie Institution, and Phipps Psychiatric Clinic, Johns Hopkins Hospital.*

It is almost universally believed that spermatozoa owe their progression through the female genital tract to the lashing of their vibratile tails. Elaborate experiments have been made testing the rate of progression of spermatozoa in salt solution under the microscope, their chemotaxis towards uterine, tubal and ovarian tissue, their negative rheotropism towards a ciliary stream, the time elapsing between copulation and the appearance of sperms at the fimbriated end of the tube. (Bischoff.)\*

Since the uterine horns of laboratory rodents as well as other mammals are filled to turgidity with fluid at the time of oestrus, it seemed logical to try to determine whether the uterine fluid also functioned as a readily miscible matrix for the rapid transport of the semen by uterine contraction.

Preliminary experiments were made by the senior writer in the

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\* The senior author (C. G. H.) questioned this view<sup>1</sup>. He stated "that spermatozoa may reach the *os uteri* through the lateral vaginal canals almost instantly by simple peristalsis of the highly motile female organ—a passive transport in the liquid of the canal."

<sup>1</sup> Hartman, Carl G., *Anat. Rec.*, 1924, 27, 293.