by ordinary absorption methods, but also by working with an "agglutinin" bound to the cells and then split off by heat to 50° C. (Landsteiner). Such a "bound agglutinin" is highly "specific"; that is, if it has been bound by cells of group II it agglutinates only members of group II and not members of group III. Such an apparent demonstration of multiple specific agglutinins does not, however, rule out simple tonicity as the sole cause of the isoagglutination, for it may be shown that when serum I has been absorbed by blood II, *the tonicity of the serum has changed to equal the tonicity of II.* Such an absorbed serum would naturally no longer agglutinate II, but would still agglutinate III, since serum II will agglutinate III.

There is strong evidence, then, for the belief that isoagglutination of human blood may be due simply to physico-chemical variations in molecular concentration, and may be independent of the presence of any hypothetical new chemical bodies (agglutinins).

7 (263)

Effects of calcium and magnesium salts upon the development of rigor mortis.

By **S. J. MELTZER** and **JOHN AUER.**

[*From the Department of Physiology and Pharmacology of the Rockefeller Institute for Medical Research.*]

The effects of calcium and magnesium salts were studied on rabbits, cats, guinea pigs, rats and frogs; most extensively, however, on rabbits. Effects were obtained by means of subcutaneous, intravenous or intra-arterial injections; the intravenous method being more extensively employed than the other methods. The infusions were given in solutions of M/1, M/2, M/4, or M/8 concentration. Of the calcium salts we used $CaCl_2$, $Ca(NO_3)_2$ and $Ca(C_2H_3O_2)_2$; of the magnesium salts, $MgSO_4$, $MgCl_2$, $Mg(NO_3)_2$ and $Mg(C_2H_3O_2)_2$.

The following are the chief results. Calcium salts hasten and magnesium salts retard the development of the rigor of skeletal muscles. After treatment with calcium salts the rigor may begin twenty minutes after death, and after magnesium treatment it may

not begin before the lapse of six or seven hours. In the rigor after injection of a calcium salt the extensors mostly prevail irrespective of the original position. After treatment with magnesium salts the flexors prevail or the animal remains in the original position. The degree of the final rigidity after injection of a magnesium salt is not less than after similar introduction of calcium. The release from rigor appears earlier after injection of a calcium salt than after similar treatment with a magnesium compound. The administration of curare does not retard the calcium effect but it increases moderately the delaying effect of magnesium. The strong accelerating effect of a developed strychnin tetanus is not interfered with by magnesium. But the tetanus of a strong dose of strychnin can be completely suppressed and then the delaying effect of magnesium remains unimpaired. Calcium salts also hasten the heart rigor and magnesium salts delay it.

8 (264)

Restraint and promotion of tumor growth.

By **SIMON FLEXNER** and **JAMES W. JOBLING.**

[*From the Rockefeller Institute for Medical Research.*]

At a previous meeting of this society, we reported upon the promoting influence of heated tumor emulsion upon tumor growth in rats.[1] This evening we wish to report briefly the results obtained upon the re-inoculation of rats having tumors or having recovered spontaneously from them as affected by the injection of the heated emulsion of tumor cells and other substances.

The rats were grouped into several series as follows:

(*a*) Rats with tumors undergoing spontaneous absorption.

(*b*) Rats from which tumors after a degree of growth had disappeared spontaneously.

(*c*) Rats which failed to develop tumors on primary inoculation.

At the time these experiments were carried on, the sarcoma was at maximum virulence and gave approximately one hundred per cent. of successful implantations. Of these a certain number later underwent retrogression, as always happens with this tumor.

[1] Flexner and Jobling: This journal, 1907, iv, p. 156.