Weights in grams: substance, 0.1590: CO_2, 0.4556; H_2O, 0.1870

Percentage Elementary Composition

Found	Calculated for $C_{24}H_{48}O_2$
C 79.147	C 78.159
H 13.161	H 13.156
O 8.691	O 8.684

Analysis of the ethyl ester:

Weights in grams: substance, 0.1414; CO_2, 0.4079; H_2O, 0.1677

Percentage Elementary Composition

Found	Calculated for $C_2H_5\,C_{24}H_{47}O_2$
C 78.670	C 78.685
H 13.271	H 13.245
O 8.059	O 8.070

Analysis of the silver salt:

Weights in grams: substance, 0.5294; Ag, 0.1208

Percentage Content of Silver

Found	Calculated for $Ag\,C_{24}H_{47}O_2$
22.818%	22.703%

The carnauba acid obtained from carnaubic wax has the same percentage composition and is recorded as melting at 72.5°.

33 (289)

The change of corpuscle resistance in the blood of immunized animals, coincident with the formation of anti-bodies.

By **FREDERICK P. GAY.**

[*From the Pathological Laboratory of Harvard University.*]

In logical sequence to the studies on isohemagglutination of human blood, the results of which have been presented to this Society[1] and recently published in detail, have followed estimations of certain physico-chemical properties of the blood of normal and of immunized animals. In human bloods three rather definite groups were found as regards interagglutination of corpuscles, groups which correspond to relative differences in tonicity of the bloods in question. The method principally relied on in the estimation of differences in the molecular concentration of various human bloods was that of the relative susceptibility of the respective blood corpuscles to hemolysis by salt solutions of different concentrations, a method which has been employed by Hamburger and others as the most delicate for this purpose.

[1] *This Journal*, 1907, v. p. 14.

In normal rabbits and guinea-pigs the percentage of hemolysis in a salt solution of given concentration is found to be in surprising correspondence between individuals of the same species. The mean isotonic solution in twenty two determinations of rabbit blood, comprising seventeen individuals, was found to be between 0.65 per cent. and 0.7 per cent. sodium chloride. In nine guinea-pigs the isotonic mean was found to be 0.1 per cent. salt solution lower than that of rabbits' blood (0.55 per cent. to 0.6 per cent.). The comparison of the freezing point of the whole defibrinated blood and of the blood serum of these two species, in several individuals, showed a corresponding difference in the freezing point of from 0.04°–0.06° C.

Rabbits were immunized with *B. typhosus* or *B. ozenæ* or the blood of guinea-pigs respectively; guinea-pigs were immunized with rabbit blood. In from nine to fourteen days after the last of several injections these animals were bled, the resistance of their corpuscles tested, and in many instances the freezing points of their defibrinated blood or of their sera determined. As regards the resistance of their corpuscles to salt solutions it was found that in every case it was increased in the immunized animal in an amount usually corresponding to a 0.1 per cent. NaCl solution. This relative difference in the resistance to hemolysis between the blood of normal and of immunized animals was controlled in as many ways as suggested themselves; animals were tested before and after immunization; normal animals were tested several different times; and in each instance normal and immunized animals were tested at the same time. In every instance the relative difference between normal and immunized animals would seem as definite as is indicated by the mean results.

In order to assert that this increased resistance of corpuscles in the blood of immunized animals to hypotonic solutions indicates a lower tonicity of the blood as a whole, it would be necessary to determine a corresponding difference in the molecular concentration of the blood or sera by freezing-point determinations. A considerable number of such determinations have been made but with results not wholly in accord with the corpuscle resistance method. In perhaps the majority of instances an actually higher freezing point (lower tonicity) is obtained for the immunized animals.

A large number of comparative tests are called for, before a definite statement can be made as to whether the increased resistance of the blood corpuscles of immunized animals is due to a change in tonicity of the blood as a whole or simply to a variation in the resistance of the corpuscles.

34 (290)

Further observations on the precipitation of inorganic colloids by sera.

By **CYRUS W. FIELD.**

[*From the Laboratory of the Department of Health, of New York City.*]

At the meeting of this Society last June, I recorded some facts which seemed to show that in rabbits the precipitating effect of their sera was greater for collodial platinum and collodial silver, after they had received injections of these two substances. Further work since that time on rabbits and on various sera from horses has shown that there are wide variations in the agglutinating or precipitating value for these colloids; not only in various animals but the value differs in the same animal at different times.

In a few cases in which I have been able to test the electrical conductivity of the sera, I have found that some of those which gave the highest conductivity gave the highest agglutinating effects, and, therefore, I believe that the variations in the agglutinating or precipitating effect of the sera is due to variations in the concentration of electrolytes. These inorganic colloids are, as is well known, extremely susceptible to the influence ef electrolytes and a very slight increase in the concentration of univalent kations and even more especially of the di- and trivalent kations, would cause wide variations in precipitating value. For instance, there might be a greater concentration of one divalent kation and a lessened one of some univalent kation and yet the total concentration of all electrolytes remain nearly the same.