emulsion was injected into the peritoneal cavity and the fragments of living tumor are introduced beneath the skin. The promoting effect on the growth of the tumor fragments to be described became evident in several sets of experiments in which the same emulsion (unheated), blood serum, bouillon, salt and Ringer solutions were injected in the same manner, with which substances this promoting effect was not obtained. If the inoculation of the fragment of the tumor is made twenty four hours after the injection of the unheated emulsion, no difference is noted between the control rats, the rats injected with the other substances, and those injected with heated emulsion. But if the fragments are inoculated ten or more days (up to thirty days) later, then the number of tumors which develop in the rats receiving the heated emulsion tends to exceed the controls and the other series mentioned; they grow with greater rapidity so as to reach double the size of the controls or even a still greater size, and show a far smaller percentage of recoveries (retrogressions). This promoting influence is present, as stated, on the tenth day after inoculation, and indications exist tending to show that it is less effective at the expiration of thirty days. On the other hand, indications also exist tending to show that if the injections of heated emulsion are repeated once or twice at ten-day intervals, the conditions of the animal favoring the growth and persistence of the tumors can be maintained and possibly even still further increased.

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On the chemical inactivation and regeneration of complement.

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The complementary substances of an active serum were supposed to be extremely labile bodies, but their stability has never been tested chemically. In this study, the action of various acids, alkalies and salts upon complements has been examined. The list of chemicals used is as follows: ACIDS — hydrochloric, nitric, sulphuric, phosphoric, formic, acetic, propionic, lactic, butyric, oxybutyric, oxalic, tartaric, citric, fumaric, maleinic, citraconic, itaconic, glycerophosphoric, uric and nucleic; ALKALIES — am-

monium hydrate, sodium hydrate, magnesium hydrate, calcium hydrate and barium hydrate; SALTS — sodium carbonate; *magnesium* sulphate, phosphate, acetate and carbonate; *calcium* sulphate, nitrate, phosphate, acetate, oxalate and carbonate; *barium* sulphate, phosphate and carbonate. Urea was also included.

It was found that all acids and alkalies are able to inactivate complements when used in sufficient concentrations. With monobasic acids it takes about 1 c.c. of $n/40$ solution to inactivate 1 c.c. of active serum. About 1 c.c. of $n/50$ solution of the acid is, as a rule, neutralized by the inherent alkalinity of the serum.

With alkalies 0.3 c.c. (ammonium hydrate 0.8 c.c.) is sufficient for inactivation. The acids and alkalies are, when used without serum, hemolytic in the quantities stated. But when mixed with the serum they — serum and chemicals — lose their activity mutually.

Alkaline salts of strong acids are not anti-complementary unless a certain limit of concentration is exceeded. Sodium carbonate is anti-complementary in a relative, but not in an absolute sense. All other salts employed are strongly anti-complementary, the magnesium salts being the least inhibiting. Calcium and barium salts of strong acids are absolute anti-complements, while the carbonates of these elements may or may not be active upon complements.

Complements which are inactivated by acids can be reactivated by neutralizing the acids with alkalies, and *vice versa*. The action of various acids, alkalies and salts upon complements renders the complement-deviation phenomenon for forensic purposes less safe, because the materials are often impure in practical cases.

Various soluble salts of oleic acid are accelerators of the complementary action of serum.