Table 1. ABSORPTION OF ANTITOXOPLASMA SERUM

	Dye test	Hæmagglutination test	Complement-fixation test
Antitoxoplasma serum unabsorbed	Positive at 1/1,280	Positive at 1/1,280	Positive at 1/640
Antitoxoplasma serum absorbed with toxoplasma suspension	Positive at 1/40	Negative at 1/20	Negative at 1/20
Antitoxoplasma serum absorbed with sensitized human red cells	Positive at 1/1,280	Negative at 1/20	Positive at 1/1,280
Antitoxoplasma serum absorbed with unsensitized human red cells	Positive at 1/1,280	Positive at 1/1,280	Positive at 1/1,280
Normal human serum control absorbed with toxoplasma suspension and then mixed with antitoxoplasma serum	Positive at 1/640	Positive at 1/320	Positive at 1/640
Normal human serum control absorbed with sensitized human red cells and then mixed with antitoxoplasma serum	Positive at 1/640	Positive at 1/640	Positive at 1/640

as an absorbent was essentially the same as that with the mouse exudate antigen.

These experiments demonstrate that the antibody measured in the hæmagglutination test differs from that in either the dye or complement-fixation tests. Therefore the antigen or antigens responsible for the hæmagglutination test differ from those responsible for the dye and complement-fixation tests.

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Effect of a Magnetic Field on Sarcoma 37 Ascites Tumour Cells

THIS communication deals with work on the effect of magnetic field on living ascites tumour cells *in vitro*. The hanging-drop culture was prepared by diluting a 7-day-old transplanted ascites mouse tumour with suitable aliquots of Tyrode solution. The culture slide to be exposed to the field was then placed between the poles of an Alnico permanent magnet in a horizontal position at a constant temperature of 37° C. The field strength used during the experiment was about 4,000 gauss and was determined independently by the susceptibility technique. The control slides not exposed to the field were treated identically. The microscopic examination of the slides was carried out periodically.

The control tumour cells showed normal growth and active differentiation, even after 18 hr., whereas most tumour cells exposed to the field showed complete degeneration at the end of this period. These experiments were repeated several times with reproducible results. The slides made after 18 hr. were stained with acetocarmine and photomicrographs were made.

Although it is not possible to explain these results clearly at the present time, the following postulates and assumptions are considered in working out a hypothesis for this purpose. (1) The 'chemical components' in the cells have varying magnitudes of magnetic susceptibility representing the diamagnetic and the permanent and any transient paramagnetic contributions. Hence, the permanent and any transient components will experience varying forces under the influence of the magnetic field. (2) Although

these forces are small from a macroscopic point of view, they may be enough to upset the delicate balance (chemical and other equilibria) inside and outside the cell. (3) Such changes are assumed, at least in part, to produce the degeneration of the cells.

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Association of Detectable Antibodies produced by *Haemonchus* spp. Infections in Cattle, with Serum Globulin Fractions

EARLIER investigations have shown that cattle which exhibit a marked degree of natural resistance to infection with *Haemonchus* spp. also develop higher complement-fixation titres than susceptible cattle, and that rises in the complement-fixation antibody titres often occurred at the same time as rises in the gamma one fraction of the serum globulin. This resistance has been shown to be heritable^{1,2}. These observations were made under field conditions where extraneous stimuli were likely to produce changes in the globulin fractions, so that the correlation between complement-fixation titres and the γ -1-globulin fraction was not always consistent and definite conclusions were not possible. To clarify this situation, cattle sera known to be positive by the complement-fixation test were fractionated and the fractions identified and tested for antibody content. The following is a brief account of the procedure and results obtained.

The β - and γ -globulins were first separated from the serum by precipitation with 16 per cent sodium sulphate at 37° C. The globulin was further fractionated on a diethylaminoethyl cellulose chromatographic column with gradient potassium acid phosphate buffer solutions ranging from pH 7.0, 0.005 M to pH 5.8, 0.1 M, after the technique in refs. 3 and 4. Three antibody positive fractions were isolated in this manner. The protein content of these fractions was estimated by the biuret colorimetric method^{2,5}. The relative concentration of the individual globulins in these fractions was ascertained by adding them to a known standard serum and observing the alteration in the globulin fraction content of the serum by electrophoresis in an Antweiler micro-electrophoresis apparatus. Complement-fixation test techniques were carried out as described in ref. 1, and hæmagglutination tests following the method in refs. 6 and 7.

Considerable variation occurred in the relative amount of total protein in the samples, and antibody contents have therefore been expressed as antibody potency per gm. of protein. Complement-fixation test results have been expressed as 'index ratios' (refs. 2 and 8), which is the ratio of the amount of complement fixed by the serum in the presence of antigen to the amount fixed in the absence of antigen, after corrections, if necessary, have been made for anti-complementary effects of the antigen. Details of the results are shown in Table 1.