The Negritos did better than many more advanced races. The results obtained by the author are thus opposed to the view that the color sense has developed within human history from a more primitive type, in which only the red end of the spectrum appeared as colored.

8 (100). **"The practical concentration of diphtheria antitoxin": R. B. GIBSON.**

The methods which have been proposed for the purification or concentration of antitoxins are, for the most part, peculiar and tedious ways by which the whole or a portion of the globulins are separated from serum or milk. Evaporation and freezing have been tried, but the general use of such methods has not been continued. Pick states that by the isolation of his soluble or high ammonium sulfate fraction, it is possible to concentrate the protective properties several times. Though superficially the most applicable, Pick's method is open to certain objections. Considerable quantities of antitoxin may be carried down with the nonprotective fraction on one-third saturation of the serum with ammonium sulfate. Such a concentration is also not practicable.

An artificial concentration can best be effected, for the present at least, by preliminary isolation of the antitoxin globulins; on this procedure is based the plan of the following method which has proved fairly successful.

The serum is precipitated with an equal volume of saturated ammonium sulfate solution and, after reprecipitation, is extracted with a solution of saturated commercial sodium chlorid. The antitoxic globulin is easily dissolved in the chlorid solution. The nonsoluble globulin settles to the bottom on standing. After filtering, the NaCl solution of the antitoxic globulin is precipitated by the addition of a half volume of saturated ammonium sulfate solution, or better still, with acetic acid in the usual way. The filtered precipitate is pressed as dry as possible with paper and dialyzed in parchment a few hours. Its solution is then neutralized and dialyzed again in running water. After two or three days' dialysis of the neutralized solution of the protein precipitate, sterilization is accomplished by double filtration through a Berkefeld filter. Before filtration, sufficient sodium chlorid is added to make its proportion equal to

0.5 per cent., and a preservative is used. The strength of the filtered product is ascertained. It is tested bacteriologically, injected into animals and finally actually administered in the Department of Health hospitals before distributing.

By this method almost all the ammonium sulfate is removed before dialysis, and the additional acid precipitation gives a purer product. Dialysis is quicker under these circumstances than when the sulfate alone is employed to effect precipitation. The antitoxin is practically all recovered, and a concentration of several times the original potency is easily and constantly obtained. The sodium chlorid separation is sharp, the two groups of proteins showing essentially different physical characters as precipitates. The final product is somewhat viscous, faintly opalescent and colorless or slightly tinged with hemoglobin. Dried at low temperatures, a beautifully transparent and entirely soluble scale antitoxin is obtained. Large quantities of serum can easily be worked over in this way at comparatively small expense.

Tests show that the artificially concentrated antitoxin, kept in small vials in an icebox, preserves its potency as well as or even better than the ordinary antitoxic serum. Therapeutically, the comparative results obtained are identical. Local irritation, rashes, etc., seem to be less frequent and severe when the refined antitoxin is administered.

9 (101). **"On the effect of magnesium salts upon the excitability and conductivity of nerves": S. J. MELTZER and JOHN AUER.**

In their communication to this society on the anesthetic effect of magnesium salts after subcutaneous injections,[1] the authors stated that they made several series of experiments on the physiological and pharmacological effects of these salts and that all their experiments had demonstrated a common result, namely, that magnesium salts produce a profound effect upon the nervous system and that this effect is invariably of an inhibitory character.

In their recent experiments the authors applied solutions of magnesium salts to the sciatic, pneumogastric, depressor, and sympathetic nerves of rabbits. Numerous applications of the magne-

[1] *Proceedings* of this Society, 1904–'05, ii, p. 81.