

given me no reason to change the conclusions already expressed in earlier papers.

I still find that round-celled sarcoma is much less susceptible to the inhibitory action of the toxins than spindle-celled, and the melanotic is even less affected.

In regard to the method of preparing the toxins and the technique of administration I have nothing new to add. The preparation which I believe to be the best is the mixed unfiltered toxins of erysipelas and bacillus prodigiosus made from cultures grown together in the same bouillon and sterilized by heating to  $58^{\circ}$  C. In children and persons much reduced in strength it is safer to use the filtered toxins. The preparation is much weaker; the relative strength of the two being about 1 to 10. Toxins to be of value must be made from very virulent cultures, the virulence being kept up by frequently passing the cultures through rabbits. The preparation being bacteriologically sterile, it can be used with perfect safety in a general hospital ward.

*Dosage* :—The dose depends largely upon the vascularity of the tumor and upon the condition of the patient, and injections when possible should be made directly into the tumor. The initial dose should seldom be more than one half a minim diluted with boiled water, which should be gradually increased until the reaction temperature reaches  $102^{\circ}$  or  $103^{\circ}$  F. After the dose has been increased to one minim dilution is unnecessary. When the injections are given subcutaneously remote from the tumor, much larger doses may be borne. Sometimes 12 or 15 minims may be given before the chill is produced.

*Aseptic precautions* :—Inasmuch as the administration of these as well as other toxins unquestionably increases the liability to infection, if pathogenic germs are present in the vicinity, great caution should be exercised in sterilizing the hypodermic needle as well as the skin. If the tumor be ulcerated or broken down, great care should be taken to keep the parts aseptic. Lack of such precautions has been the cause of death in two fatal cases. In regard to the duration of the treatment, fortunately we are able in most cases to tell within three or four weeks whether or not the toxins are likely to be beneficial. If no improvement is apparent at the end of this time, it is seldom worth while to continue the injections. In most of the successful cases marked improvement has occurred within a week after the first injections. The growth may disappear in one of two ways. If very vascular there may be rapid breaking down and sloughing of the