ness show no significant difference. Previous studies[3] with cow peas have shown that roots of plants grown with their shoots in the light contain several times as much ascorbic acid as those of plants grown in darkness.

The excised moonflower roots cultured in the light possessed a deep green color due to the presence of well-developed chloroplasts. For this reason a strict comparison can not be made between these light-grown cultures and the colorless roots of intact plants grown in the light. The excised roots grown in darkness may be more nearly comparable to the roots of intact plants, since both lack chloroplasts.

It has been observed[4] in other experiments with intact plants that roots with a relatively low content of ascorbic acid during a prolonged period of cloudy weather showed a marked increase of this substance following a day of bright sunshine.

Although the evidence is not conclusive, it seems probable that the increased quantity of ascorbic acid in the excised roots cultured in the light is due to the presence of well-developed chloroplasts. If this is true, it seems probable that the colorless roots of intact plants grown in the light do not synthesize vitamin C but receive their supply from the tops. It is planned to continue these studies, using excised roots which do not develop chlorophyll.

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A NEW MENINGOTOXOID

FOLLOWING the successful production of a toxin from gonococcus as well as a potent antitoxin against the same,[1] it was considered of interest to ascertain if similar procedures followed out with meningococcus might not also yield equally promising results. This note is merely to record briefly the method followed and the results obtained to date and is preliminary to a report to be made later.

THE METHOD

Ordinary broth having a pH of 7.7 was used. Two per cent. dextrose was added and the media distributed in quantities of 400 cc to diphtheria toxin flasks. It was seeded with an indigenous strain of meningococcus (No. 64) by planting a pellicle on the surface of the media. The culture was incubated at 37° C for 12 to 15 days until the surface growth or pellicle began to settle to the bottom of the flask. The broth culture was then filtered through Zeiss paper filters K and EK and the filtrate used for the first experiments. This filtrate was found to be so toxic that finally 3 to 4 per cent. of formaldehyde was added to it and then it was incubated at 40° C for 45 days. The toxin was then precipitated by adding 1.5 per cent. alum, the precipitate duly washed and finally dissolved by adding 4 per cent. sodium citrate. The toxoid thus obtained was used for the next series of experiments.

RESULTS

The unmodified toxin when injected into mice intravenously in quantities of 0.2 cc killed immediately; 1.0 cc injected intravenously into guinea-pigs was also lethal at once. The intradermal injection into guinea-pigs of 0.2 cc caused necrosis. This filtrate was thus observed to be of high toxicity. It also gave flocculation and precipitation reactions when tested with anti-meningococcus serum. Its antigenic properties in animals were found to be of a high grade. Repeated injections led to the development of antibodies, as proved by flocculation tests.

The filtrate treated with formaldehyde and then precipitated with alum afforded a much more satisfactory toxoid. This toxoid was much less toxic but retained all its capacity to elicit antibody formation. For instance, one month after the injection of a single dose of 1.5 of the alum-precipitated toxoid into rabbits the presence of antibodies in their sera was demonstrated.

In humans it was shown that consecutive injections of 0.5 cc, 1.0 cc and 1.5 cc of the non-precipitated toxoid or of 1.0 cc of the precipitated toxoid caused the formation of demonstrable antibodies in their sera.

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INCREASED SENSITIVITY OF HYPOPHYSECTOMIZED RATS TO RADIATION

IN a study of the metabolism of Na and K in relation to adrenal cortical physiology, we have administered radioactive isotopes of these elements to variously treated animals. We have been surprised to find that hypophysectomized animals could not tolerate these "tagged atoms" even in "physiological" doses (*i.e.*, 10 microcuries), while intact animals and adrenalectomized animals show no untoward effects from such doses.

Our attention was first called to this phenomenon in an experiment in which 10 hypophysectomized rats received approximately 10 microcuries of radioactive K and four such animals an equivalent dose of radioactive Na made up in a 1 cc isotonic solution and injected intraperitoneally. All the animals were dead within 48 hours. In a large series of normal rats to which the same dose of these radioactive isotopes had been administered, no ill effects have been observed.

We next selected ten animals which had been hypo-

[3] Mary E. Reid, *Amer. Jour. Bot.*, 25: 701–711, 1938.
[4] Unpublished data.
[1] Gonococcus toxin and antitoxin, *Zentrabl. f. Bakt., Parisitenkun., u. Infektionskr.*, I Abt. Orig. 1939, Bd. 143.