

to above regularly produce capsules under suitable conditions. Furthermore, on the blood-ascitic fluid agar of Pilot, Hallman and Davis⁵ these cultures produce large, moist, surface colonies and spreading colonies between the agar and glass.

The group of 120 cultures has been compared with 16 cultures of *Str. epidemicus*.⁶ The two groups have been found identical in every respect. They produce a low acidity (not exceeding pH 4.8) in glucose broth, fail to hydrolyze sodium hippurate, produced a marked hemolysis in fluid mediums, and under suitable conditions produce large, distinct capsules. On ascitic fluid-blood agar they produce large, moist colonies. They ferment lactose, sucrose, salicin and sorbitol. Mannitol and trehalose are not attacked.

From the results cited above it is evident that, by the methods now in use, it is not possible to differentiate the cultures of *Str. epidemicus* in question from streptococci of animal origin. The group of animal strains which we have studied is composed of cultures isolated from horses, chickens, hogs, cows and foxes. This type is the predominant one in animals and, with the exception of the high-acid-producing strains from bovines and *Str. equi* of strangles, comprises approximately 95 per cent. of the hemolytic streptococci of animal origin which we have studied.

Further comparative studies are being carried out with cultures identified as *Str. epidemicus* in other laboratories. The results of these studies will be reported later.

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THE CAROTENE CONTENT OF TEN VARIETIES OF CARROTS

LITTLE is known of the variation in carotene content of different varieties of carrot, other than the fact that the roots of certain varieties look yellower than others. For this study ten varieties, comprising white, yellow and orange garden and field carrots, were grown under greenhouse conditions. Seeds were planted in November, and the plants were harvested 23 weeks later.

For analysis, the roots were chopped, and a 50 gram sample was ground with sand. Without being dried, the sample was exhaustively extracted with cold acetone, and the extract was shaken with 1 volume of petroleum ether and 2 volumes of 2 per cent. NaCl. The pigment passed completely into the petro-

leum ether layer. The aqueous acetone layer was discarded and the petroleum ether was washed 4 times with the salt solution.

The petroleum ether extract was compared spectrographically with a weighed amount of purified carotene, which had been put through the same "extraction" procedure as the carrot roots themselves. Comparison of the characteristic blue-violet absorption bands photographed in the series of known and unknown dilutions gave the data from which the carotene content was estimated.

TABLE I

Variety of carrot	Carotene content	
	mg per 100 gm	gm per bushel
Early Scarlet Horn	9.6	2.2
Oxheart (Guerande)	8.9	2.0
Long Orange	8.3	1.9
Danvers Half Long	8.2	1.9
Chantenay	8.0	1.8
Earliest Scarlet Forcing	6.4	1.5
Large Yellow Belgian	2.9	0.66
Isbell's Victoria	1.5	0.34
Large White Belgian	0.15	0.034
Isbell's Maude S	0.12	0.027

The findings are summarized in Table I, from which it is evident that the garden varieties contain the largest amount of carotene, although traces are found even in the white field carrots. The extremes in carotene content are shown by Early Scarlet Horn and Isbell's Maude S, the former having 80 times as much as the latter. It is an interesting exception to the common preference for colorless foods that the varieties of carrot most highly esteemed for human consumption are those containing the most carotene.

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⁵ I. Pilot, B. Hallman and D. J. Davis, "A Culture Medium for the Isolation of *Str. epidemicus*," *Jour. Amer. Med. Assoc.*, 95, 264, 1930.

⁶ These cultures were kindly furnished us by Dr. W. D. Frost. The group is composed of cultures isolated from the udders of cows and from epidemics of septic sore throat in humans.