

That portion of the total absorption in the blue end of the spectrum of frog nerves which is not due to carotinoid pigments is probably to be attributed to the partial oxidation of the unsaturated groups in the phosphatids and related substances of the myelin sheath. Commercial (partially oxidized) lecithin, for example, shows a very similar spectrum. *Pure* linoleic acid shows little absorption in this region. If allowed to stand in air, however, general absorption up to about  $520\mu\mu$  soon appears, resulting from the oxidation, and perhaps polymerization of the unsaturated acid.

## 5491

Changes in Morphology of *Giardia Canis* as Affected by Diet.

H. TSUCHIYA. (Introduced by J. Bronfenbrenner.)

*From the Department of Bacteriology and Public Health, Washington University School of Medicine.*

The study on the *Giardia canis* (Hegner, 1922) of dog revealed the fact that there were at least 2 diverse strains, as has been found with *Giardia* in man.<sup>1</sup> These strains differed one from another with respect to the dimensions and shapes of their cysts and trophozoites. Differences were also noted in the ease of obtaining trophozoites and of producing excystation *in vitro*. Differences in size and shape of cysts remained constant as long as the diets were the same.

When infected animals (young puppies) were kept on a diet rich in carbohydrates, the mean dimensions of cysts were  $11.47\mu \pm .03\mu$  in one and  $10.37\mu \pm .03\mu$  in the other. However, when a carbohydrate diet was replaced by a high protein diet, the respective mean dimensions were found to be  $12.05\mu \pm .03\mu$  and  $11.38\mu \pm .03\mu$ . These changes were transitory in nature and were easily reversed by corresponding changes in the diet. In view of the fact that diets affected at the same time change in the bacterial flora from an aciduric to a putrefactive type and vice versa, the question arises as to whether the variations in *Giardia* were due to the changes in diet directly or indirectly as result of changes in the bacterial flora.

With respect to the power to invade the tissues, the strains exhibited no differences—in no instance were there any trophozoites present within the tissues.

Incidentally, in the materials examined during the course of the

---

<sup>1</sup> Tsuchiya, H., *Am. J. Hyg.*, 1930, **12**, 467.

experiments, there was observed a positive correlation between the lengths and breadths of cysts of the 2 strains, as has been found in the cysts of *Giardia lamblia*,<sup>2</sup> and paralleled the findings of Hegner in regard to *Giardia agilis*<sup>3</sup> and *Trypanosoma diemyctyli*.<sup>4</sup>

## 5492

**Incidence of Protozoan Infections of Intestinal Tract Among Children in Saint Louis.**

H. TSUCHIYA. (Introduced by J. Bronfenbrenner.)

*From the Department of Bacteriology and Public Health, Washington University School of Medicine.*

This survey was undertaken to determine the relative incidence of the protozoan infections among white children under varying states of health and environment. The subjects were, therefore, taken from 3 distinct groups; the first consisted of 164 inmates of 2 orphanages, the second of 156 patients of 2 hospitals for convalescents and the third of 42 children suffering from variety of acute illnesses. The total was 362 children.

A comparative study of the incidence of protozoan infection as affected by the general state of health showed no significant differences among these groups. In general, the incidence of infection was found to be lowest in the third group (sick children) and the highest among the healthy children in one of the orphanages. This result seems to indicate that environmental conditions play important rôle in the transmission of protozoan infections.

Of the 362 children examined, in 120 cases (33.09%) the infection was limited to one protozoan species; in 37 cases (10.22%) a double infection was found; and in 11 cases (3.02%) there was a triple infection. The incidence of *Giardia lamblia* was the highest, other protozoa following in order of frequency *Endamoeba coli*, *Chilomastix mesnili*, *Endolimax nana*, *Endamoeba histolytica*, *Iodamoeba williamsi* and *Trichomonas hominis*. In the majority of mixed infections, *Giardia lamblia* was associated with either one or 2 other protozoa. As compared with the surveys conducted elsewhere, the present study revealed one of the highest incidences reported.

---

<sup>2</sup> Tsuchiya, H., *Am. J. Hyg.*, 1931, **13**, 544.

<sup>3</sup> Hegner, R. W., *Am. J. Hyg.*, 1922, **2**, 435.

<sup>4</sup> Hegner, R. W., *J. Parasitol.*, 1921, **3**, 105.