and subsequently carried through 14 serial passages. Two hamsters were used for each passage. The final passage cultures of strains 228 and 912 were each lyophilized.

A comparison was made between the original isolation of strain 912 from the hog cholera virus (which had been lyophilized) and the lyophilized culture after hamster passage. This was done by injecting hamsters intraperitoneally with varying parallel amounts and densities established by the McFarland nephelometer method. Though an insufficient number of hamsters were used for a critical comparison, the results definitely indicated that the serial passage of culture 912 had increased in virulence for hamsters. No comparison was made with strain 228 as we did not lyophilize the original isolation.

THE FLAGELLATION OF SPIROCHETES

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With the perfection of the electron microscope has come the demonstration of flagella on such spirochetes as *Treponema* and *Borrelia*. With the exception of

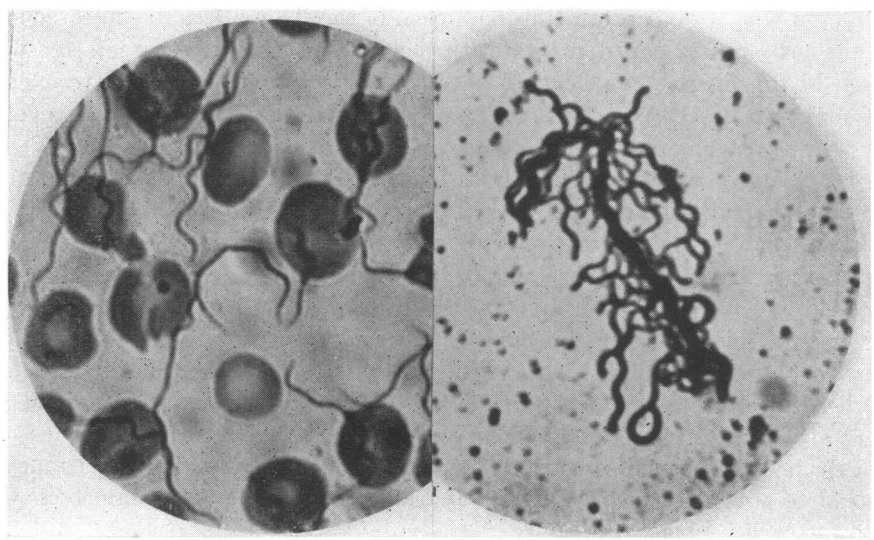

Figure 1 (*left*). Giemsa stain of *Borrelia novyi* in mouse blood. Photomicrograph × 2,400.
Figure 2 (*right*). Flagella stain (Leifson's) of same organism as shown in figure 1 and also from mouse blood. Photomicrograph × 2,400.

the report by Swellengrebel (Ann. inst. Pasteur, **21,** 562, 1907), the author is unaware of any published work on the staining of spirochetal flagella; hence this short note.

Figure 2 is a photomicrograph showing the flagella of a spirochete identified as *Borrelia novyi*, stained by the method of Leifson (J. Bact., **20,** 203, 1930). The stain was made directly from the blood of an infected mouse and is to be compared with a Giemsa stain of the same blood illustrated in figure 1. The peritrichous nature of the flagellation is obvious.

Material from a clinical case of Vincent's infection has also been stained, and many spirochetes with peritrichous flagella, more or less identical with that shown in figure 2, were demonstrable. Whether or not all oral spirochetes have identical flagellation remains to be shown. Material from a syphilitic chancre has been stained and the peritrichous flagellation of *Treponema pallidum* demonstrated.