to the red end of the spectrum for approximately 10$\mu\mu$. This phenomenon of shifting of the absorption bands for 10 to 15$\mu\mu$ towards the longer wave lengths is a typical and well recognized property of chlorophyll protein complexes as has been shown by Smith, French and earlier investigators. As a result of the observations of these authors, the union of chlorophyll and protein is already well recognized as a naturally existing combination, chlorophyll of higher plants (Smith[15]), bacterio-chlorophyll of purple bacteria (French[16]).

Conclusions. Chlorin-e and chlorophyllin in concentrations of .025 and .050% in glycerine broth and Sauton's media inhibited the growth of H-37 and avian tubercle bacilli. Copper chlorin-e, deuteroporphyrin, copper deuteroporphyrin, and pyrroporphyrin sulfonic acid-sodium salt showed no growth retarding effects in concentrations of .025 and .050%. Evidence is presented to suggest that the H-37 tuberculo-protein of the living bacillus is capable of binding copper chlorin-e. The absorption spectrum of the copper chlorin-e-bacillary protein complex when compared with that of copper chlorin-e-sodium in aqueous solution lends support to the assumption that chemical union between protein and pigment exists.

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Mosquito Transmission Experiment with Poliomyelitis Virus.

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Although a few attempts have been made to transmit the virus of acute anterior poliomyelitis by mosquitoes, the field does not appear to have been entirely exhausted of possibilities and the following is submitted as a slight contribution to this line of investigation. Simmons, Kelser and Cornell[1] have summarized the earlier efforts and this summary will not be repeated. Theoretical arguments for or against the possibility will decide nothing, but repeated efforts may add weight to either side of the question.

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15 Smith, E. L., *Science*, 1938, **88**, 170.

16 French, C. S., *Science*, 1938, **88**, 2272; *J. Gen. Physiol.*, 1937, **20**, 711; *ibid.*, 1937, **21**, 71.

1 Simmons, J. S., Kelser, R., and Cornell, V. H., PROC. SOC. EXP. BIOL. AND MED., 1934, **31**, 496.

The following is a brief account of the essential points of the experiment:

A normal *Macacus rhesus* monkey was inoculated intracerebrally with 0.3 ml of the Aycock strain of poliomyelitis virus on February 23, 1939. Forty-eight hours later (Feb. 25) this animal was in turn exposed to cages of *Aedes egypti* and *Culex pipiens,* both lots having been laboratory reared. Fifteen of the *Aedes* fed; none of the *Culex.* On the sixth day after inoculation (March 1) the monkey had a temperature of 104°F; the next day 105°F, and paralysis appeared on the eighth day after inoculation (March 3). This animal progressively grew weaker, paralysis spread, it died and was autopsied on the ninth day after inoculation. Eight to nine *Aedes* fed on this animal on the first day of illness (March 1; 6th day after inoculation) and on that day one *Culex* also fed. On the second day of illness (March 2) 16 *Aedes* and 8 to 10 *Culex* fed. On the third day of illness 6 to 7 *Aedes* and 6 *Culex* fed. On the fourth day of illness (March 4; 9 days after inoculation) 17 to 19 *Aedes* and one *Culex* fed. All of these feedings were with the same lots of insects in the same cages and observations as to feeding were made immediately after exposure. In all, 46 to 47 *Aedes egypti* fed (15 prior to rise in temperature and 31 to 32 after rise in temperature); 16 to 18 *Culex pipiens* fed, all after rise in temperature of the monkey.

Beginning on March 9th, a normal *Macacus rhesus* monkey was exposed to the above mosquitoes, and again on March 13th, 17th, 22nd and 28th. These dates were, respectively 9, 13, 17, 22, and 28 days after the inoculated monkey first showed a rise in temperature. The number of insects feeding on these dates were: *Aedes,* 16 on the 9th, 21 on the 13th, 20 to 24 on the 22nd, and 32 to 34 on the 28th; *Culex,* 8 on the 9th, 5 to 6 on the 13th, 12 on the 17th, 6 on the 22nd, and 7 to 9 on the 28th. The totals of these latter feedings were *Aedes,* 89 to 93; *Culex,* 38 to 41. The minimum interval between initial feedings on the inoculated monkey and the normal monkey was 5 days; the maximum 12 days. During the time between the last feedings on the inoculated monkey and the last on the normal monkey there were 25 deaths of females in the *Culex* cage and a somewhat larger number in the *Aedes* cage. At the end of the experiment there remained alive 48 female *Culex* and 56 female *Aedes.*

These remaining female mosquitoes of both species were killed with chloroform, grouped together, ground in a small amount of Tyrode solution, the suspension passed through a "V" filter and three-fourths of a milliliter of the filtrate injected intracerebrally into a new normal monkey.

Both of the normal monkeys used for exposure to the possibly infected insects and inoculated with the filtrate were observed for 3 weeks and presented no symptoms of disease.

There is an obvious defect in the method used which was not realized until late in the experiment. Attention is called to it that it may be avoided in the future. This has to do with the uncertainty as regards the insects which fed upon the infected monkey and later upon the normal one. This criticism is more logical regarding the *Culex* mosquitoes used than in the case of the *Aedes* for in the former the discrepancy in the number feeding and the total present is greater. The reason for permitting this feature to enter the experiment was that previous attempts to induce the Culicides to feed in small groups, especially of females alone, had met with but scant success. These mosquitoes seem always to feed better in swarms, and especially in the presence of males. It would be advisable to so feed them upon the infected animal in the future, remove the females that have fed, then later create a new swarm with these and newly added males at the time of exposure to the normal animal.

Summary. 1. Of approximately 100 female *Aedes egypti,* 46 to 47 fed upon a *Macacus rhesus* monkey inoculated intracerebrally with the Aycock strain of poliomyelitis virus and later 89 to 93 of these females fed upon a normal monkey at dates ranging from 5 to 28 days after the feedings upon the inoculated animal following first symptoms. Similarly, of approximately 75 female *Culex pipiens,* at the same intervals, 16 to 18 fed upon the inoculated animal and 38 to 41 of the same original group fed upon the normal monkey. 2. At the end of the experiment the remaining female mosquitoes were chloroformed, ground, suspended in Tyrode solution, and the filtered solution inoculated intracerebrally into another normal monkey. 3. Neither of these normal animals, inoculated either by cerebral injection or exposure to supposedly infected mosquitoes, developed any symptoms of poliomyelitis in the 3 weeks period of observation.