

let me know if you find any definite results in the future.

I also enclose a paper on the form of soap colloid particles.

Yours sincerely

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Dear Mr. Krishnan,

I read your remarks in the current number of the Indian Journal of Physics on the black soap film with great interest. The matter is not quite so simple as it appears: Perrin is responsible for much confusion by his failure to make clear the complete abnormality of his stratified films. Among others, Sir W. Bragg was somewhat led astray. I have discussed this in my book "Soap Films" (Bell) recently published & I enclose a paper which may interest you.

When I repeated Perrin's work

on stratified films, I very naturally examined a few in polarized light but without being able to detect anisotropy even in quite high order stratifications. I only did this in a rather rough way and I imagine the experiment is well worth repetition in monochromatic light. Have you seen a reference to this subject in Alexander's Colloid Chemistry Vol. I. p: 108, in the article on mesomorphic states by Friedel; and in the Ann. de Phys. 18, ~~25~~ 302/303, 1922, Friedel remarks on the difficulty due to the small birefringence of the soaps.

There are really three points to be considered.

1 We may have a thick liquid soap film in which the surface layer is anisotropic & the interior liquid isotropic.

The effect of the surface layer alone would almost certainly be too small to detect: it would be independent, of course, of the thickness of the film.

2 The orientation, by flow, of the anisotropic thread-shaped colloid particles in the interior of the film might make it doubly refracting as a whole until it had drained to the black state when, of course, the effect would no longer persist.

3 A stratified film, consisting almost entirely of solute, should show a degree of anisotropy proportional to its thickness. With care such single stratifications can be obtained up to nearly 1μ thick.

The whole subject is a most interesting one & I hope you will