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CHOLESTERIC ALREADY DESCRIBED IN 1838!

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C HOLESTERIC ALREADY DESCRIBED IN 1838!

from H Stegemeyer, Paderborn and H Kelker, Frankfurt/Main

More than one hundred years ago, in 1888, the first thermotropic liquid crystal was detected by Friedrich Reinitzer in Prague. In his famous letter to Otto Lehmann [1] he described the selective reflection of visible light of the cholesteric as well as the blue phase of cholesteryl benzoate [2,3].

However, was Reinitzer indeed the very first to observe the outstanding properties of cholesterics? Leafing through some old books by a famous author one's eye is suddenly caught: In Edgar Allan Poe's utopian novel "The narrative of Arthur Gordon Pym" written in 1838, the protagonist Pym with his crew landed on an unknown island on which nothing was familiar. He refused to taste the water of a small brook because of its singular character. But later on he realised that all the water on the island had the same appearance. Pym continues his story [4]:

"I am at a loss to give a distinct idea of the nature of this liquid, and cannot do so without many words. Although it flowed with rapidity in all declivities where common water would do so, yet never, except when falling in a cascade, had it the customary appearance of limpidity. It was, nevertheless, in point of fact, as perfectly limpid as any limestone water in existence, the difference being only in appearance. At first sight, and especially in cases where little declivity was found, it bore resemblance, as regards consistency, to a thick infusion of gum arabic in

common water. But this was only the least remarkable of its extraordinary qualities. It was not colourless, nor was it of any one uniform colour — presenting to the eye, as it flowed, every possible shade of purple, like the hues of a changeable silk. Upon collecting a basinful, and allowing it to settle thoroughly, we perceived that the whole mass of liquid was made up of a number of different veins, each of a distinct hue; that these veins did not commingle; and that their cohesion was perfect in regard to their own particles among themselves, and imperfect in regard to neighbouring veins. Upon passing the blade of a knife athwart the veins, the water closed over it immediately, as with us, and also, in withdrawing it, all traces of the passage of the knife were instantly obliterated. If however, the blade was passed down accurately between the two veins, a perfect separation was effected, which the power of cohesion did not immediately rectify".

Actually, what Gordon Arthur Pym had seen with his own eyes was nothing but a cholesteric liquid crystal (cf. Figs 1 and 2!)

Can anybody answer the question where Edgar Allan Poe received information about cholesterics? Or was he a clairvoyant?

Marie Bonaparte, Poe's biographer and a well-known psychoanalyst, said: "It is not difficult to identify this water as blood" [5].



Figs 1 & 2: "Pym water" — droplets of a cholesteric liquid crystal showing reflection colour and distinct veins.

References:

- [1] H Stegemeyer, *Liq. Crystals* 5, 5 (1989).
- [2] H Stegemeyer and H Kelker, *Nachr. Chem. Techn. Lab.* 36, 360 (1988).
- [3] An English translation of Reinitzer's original paper in *Monatshfte Chem.* 9, 421 (1888) is given in *Liq. Crystals* 5, 7 (1989).
- [4] J A Harrison (Ed), Edgar Allan Poe, *Complete Works*, Vol III, p 186/7, AMC Press Inc., New York (1965).
- [5] Marie Bonaparte: *Edgar Poe, eine psychoanalytische Studie*, Vol II, Suhrkamp Taschenbucher 592.

COMPETITION

LOGO

We have received six entries for this so far, mainly based on the initial letters ILCS. It has been decided to keep the competition open for a further period, and additional entries are invited — Please send them to the Secretary, ILCS

MISCELLANY

An interesting perspective on the liquid crystal literature is provided by a paper in the information science journal *Scientometrics* (published by Elsevier), Vol 20, 197-220 (1991). The article by U N Singh and S Arunachalam reports on the publication and citation patterns in the literature of liquid crystals with special reference to the contributions of India, Canada, Japan, the United Kingdom and the Soviet Union. It provides a fascinating snapshot of the impact of selected papers on the subsequent literature, and no doubt will be the source of much discussion.