MICROSCOPICAL EXPLORATION THREE

WART PAINT AND WAVE PLATES or

WHEN SCIENCE BEGETS ART

James R Stewart Cumbria UK.

INTRODUCTION

Science and art have long been considered by many to be mutually exclusive. That idea of their exclusivity could not be further from the truth.
Having been involved with science, as a career, for many years, I wondered about the possibility of combining my hobbies, microscopy (science) and photography (arty, sometimes), with a touch of chemistry, a soupçon of physics and a smattering of crystallography, in order to produce some artwork worth viewing.
So, when I'd finished wondering, I went online and bought a little bottle of Wart Paint and some branded clear sticky tape (Sellotape). Also, I already had acetone free nail polish remover (ethyl ethanoate).
The microscope used in this investigation is an APEX PRACTITIONER microscope fitted with a BRUNEL EYECAM PLUS digital eyepiece camera and a homemade polarising filter/analyser combo.
A GOOD START!!!!

THE SCIENCE

FOR THE WART PAINT

Now, the wart paint that I bought is a mixture of two organic acids, (2- hydroxybenzoic acid and 2- hydroxypropanoic acid), an alcohol (denatured ethanol) and diethyl ether. It also has some other stuff in it to help in its application to the skin, but we'll ignore that.

By trial and error I discovered that the wart paint, as supplied, was too concentrated for my purpose and so, also by trial and error, I determined that a dilution factor of ten gave the best results.
This dilution was achieved by combining one millilitre of the wart paint with nine millilitres of the nail polish remover in a small screw top glass vial. This yielded a homogeneous clear solution.
There, that's the chemistry dealt with.

FOR THE WAVEPLATES

A detailed description of the physics of polarisation filters and half wave/full wave retardation plates or wave plates is beyond the scope of this report and is well documented elsewhere.
Here I am concerned only with the effects that these devices have on the images which I capture.
To that end I constructed a series of wave plates by affixing the Sellotape to clean glass microscope slides in various numbers of layers and orientations of those layers to each other.
These wave plates adjust the plane of polarisation of polarised light.
Physics, done.

FOR THE SPECIMEN SLIDES

To prepare specimen slides for viewing under the microscope, different numbers of drops of the wart paint dilute solution were applied to several clean plain glass microscope slides and allowed to evaporate at room temperature. This resulted in each slide having a different crystal formation on it.
Is this crystallography? Today it is!

VIEWING THE SPECIMEN SLIDES

The microscope was set up with the polarising filter immediately above the sub-stage LED illumination and the analyser in the body tube between the objective lens and the eyepiece camera.
The polariser and analyser were arranged in crossed configuration giving maximum extinction.

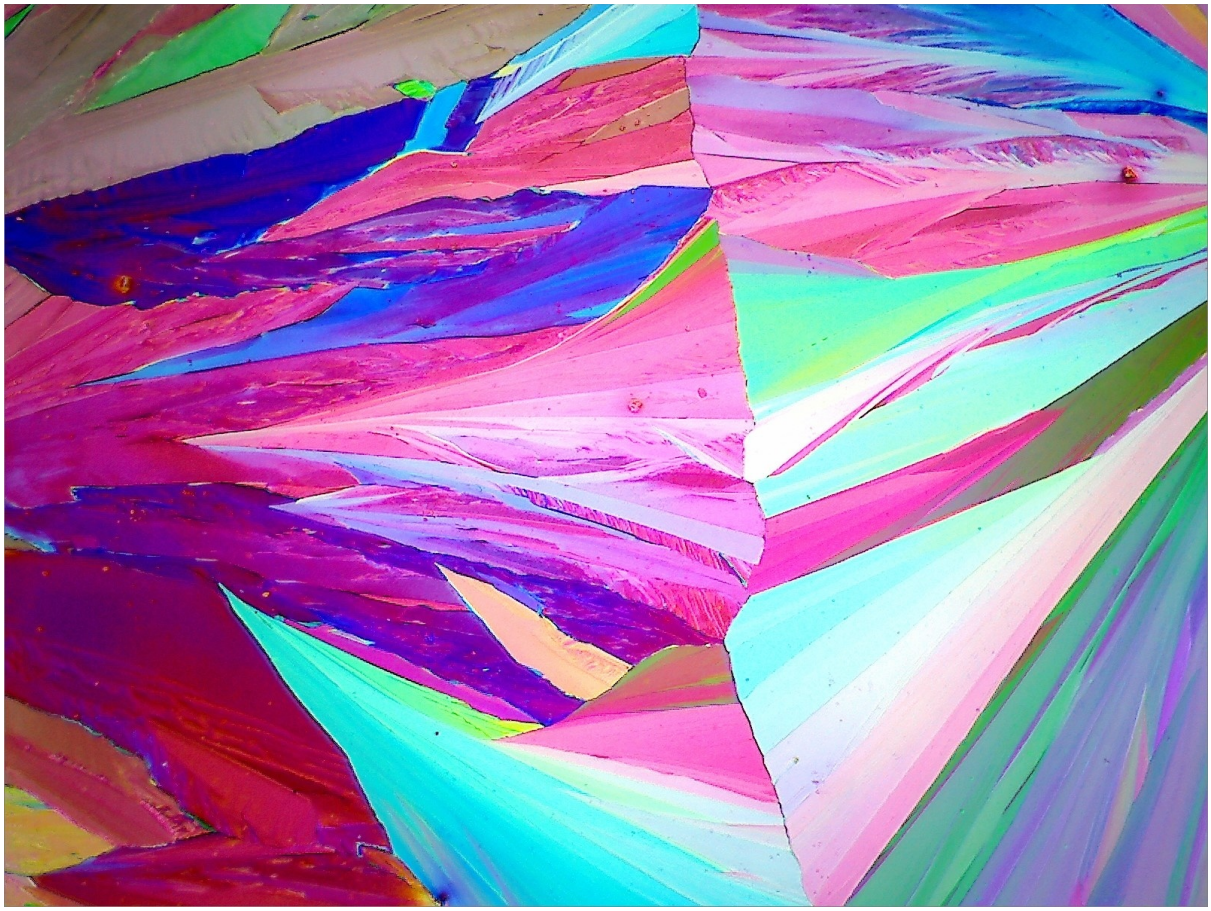
Each of the specimen slides was then viewed with one of the wave plates positioned on the microscope stage immediately beneath the slide and the images below were captured.

THE ART

The interpretation of the following images is purely subjective and will, most likely, be different for each person who sees them.
I have included my own suggestions below each of the pictures
It is my hope, however, that anyone who chooses to view these 'works of scientific art' does, at least, derive some small pleasure from having done so.

Parrot feathers

Bracken on the fellside



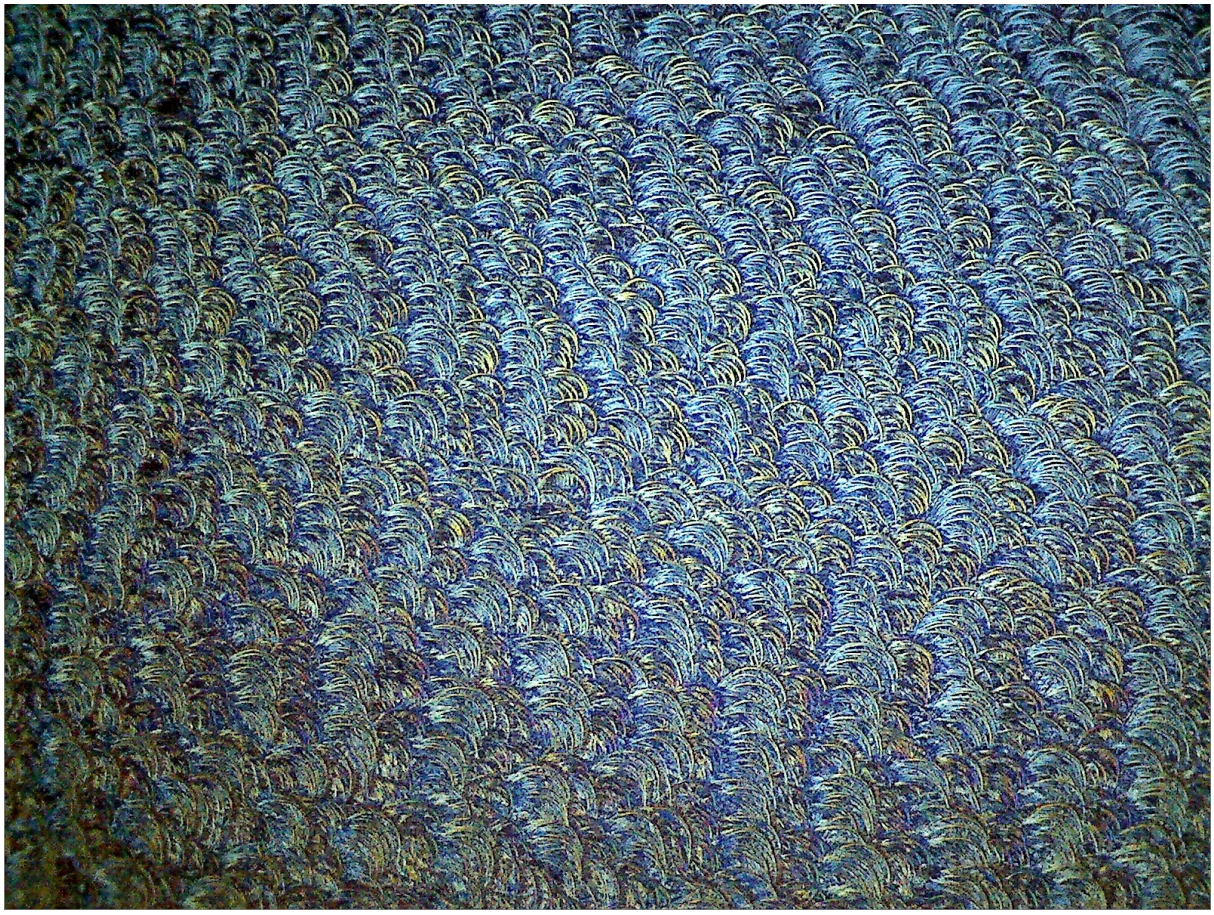
Mixed up rainbow

Are we near the event horizon?

Flamingo feathers

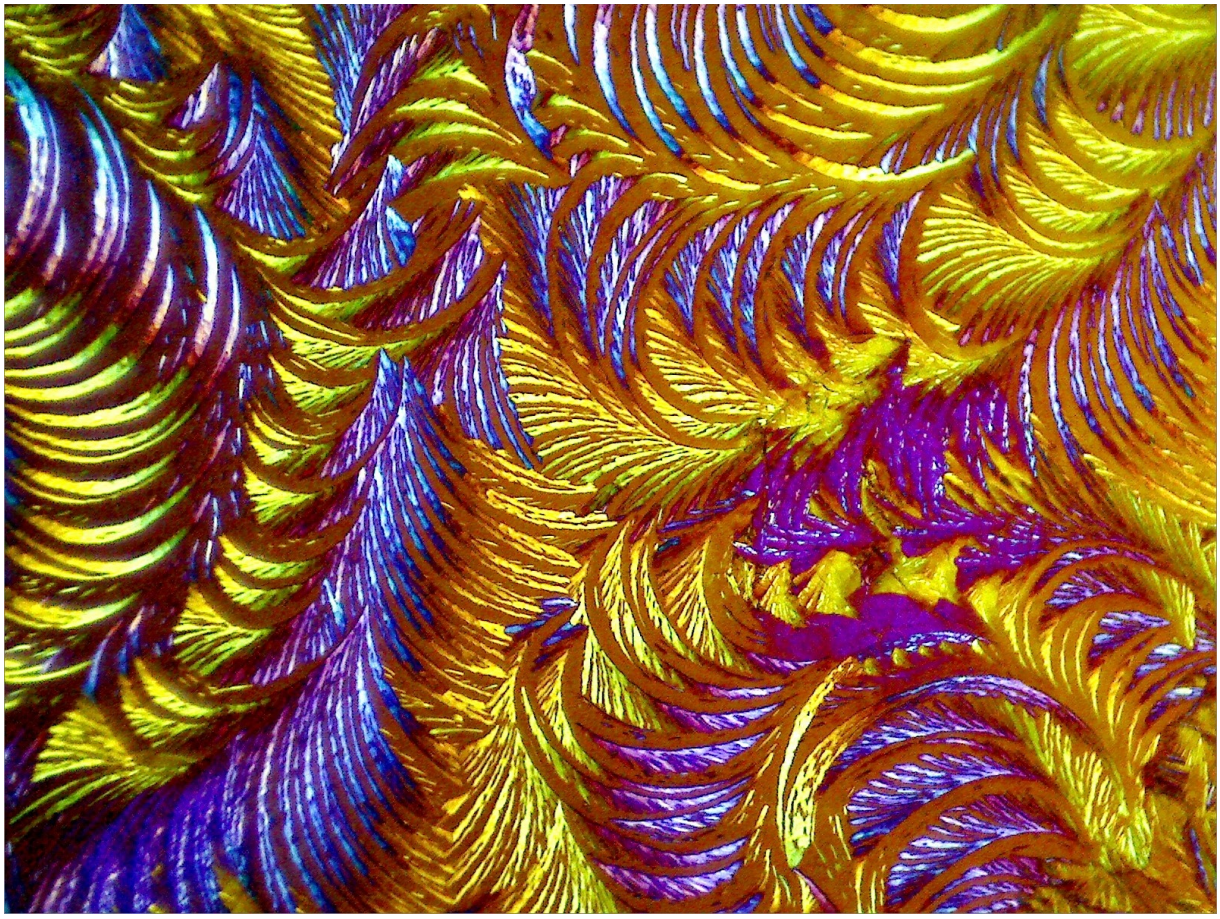
Tassels from Grandma’s curtain tiebacks

Meadow Grasses

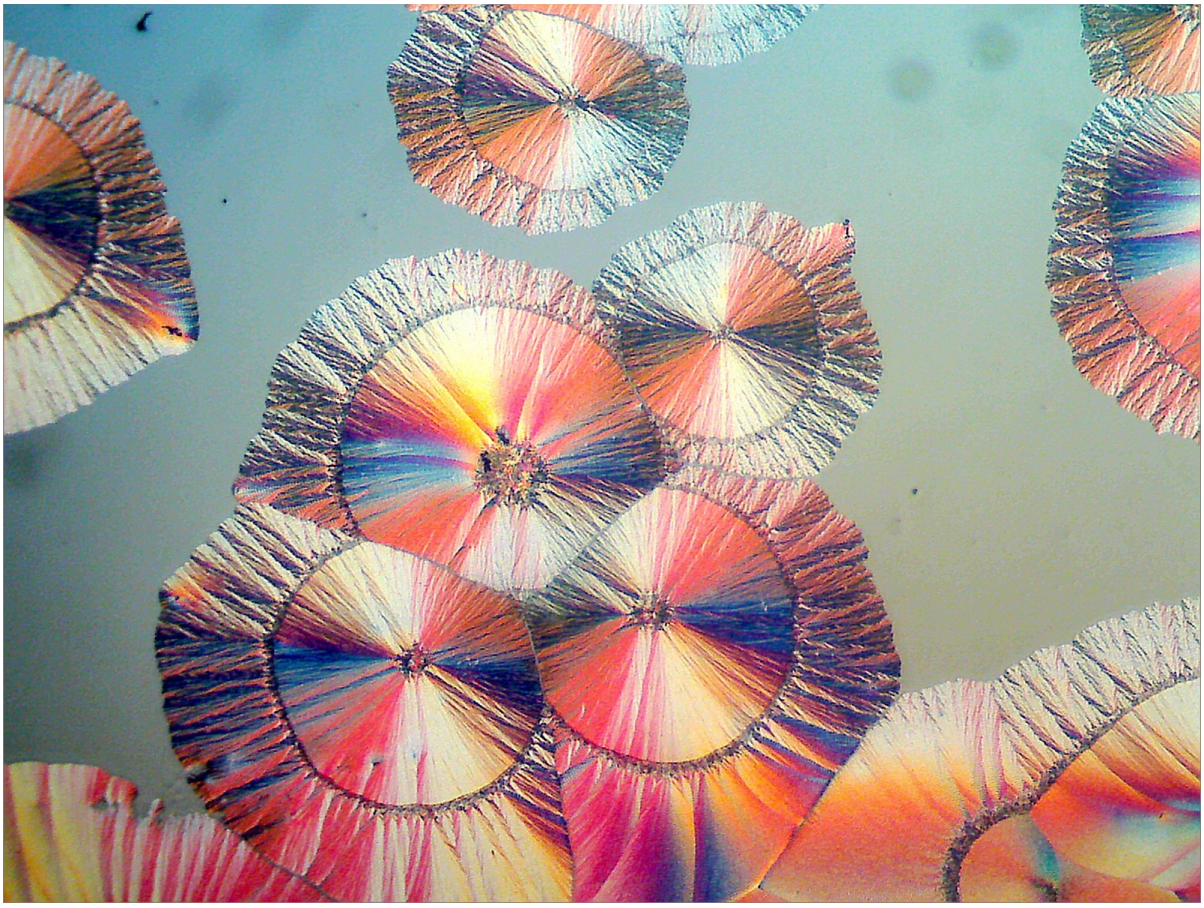


Metal pan scrubber

Busted Petunias



Tarnished Gold Braid



Bubbles with spikes?

THE END

As what do you see them?

stewartr178 at yahoo dot co dot uk

James Stewart