

## BOOK REVIEWS

ELISABETH WEST FITZHUGH, editor, *Artists' Pigments. A Handbook of Their History and Characteristics, Volume 3*, National Gallery of Art Washington & Oxford University Press (1997) ISBN 0-89468-256-3.

Some years ago I wrote a review [1] of *Artists' Pigments, Volume 1*, edited by Robert Feller, the long awaited continuation of the famous series on pigments published under the aegis of Rutherford J. Gettens. At the time I niggled over a number of points. Firstly, this was a handbook without an index. Secondly, I was concerned that the target purchasers mentioned on the back cover of the book would prove to be marginal in comparison with the primary market not mentioned, namely the conservation scientists and other scientists working in our field. Thirdly, I concluded that most of the papers included in the volume had been written by scientists for scientists. Because I am one of those scientists, I frequently have cause to consult the 'handbook'. Strictly in confidence, Volume 1 became one of my top one hundred books.

In the meantime Volume 2 was published, an improved, revised edition of the *Studies in Conservation* papers on azurite, malachite, ultramarine, etc.. These papers were written between 1966 and 1974.

I remember wondering, some time ago, how the third volume, edited by Elisabeth West FitzHugh, might be. The book was already being advertised although obtaining a copy for our library nevertheless proved quite a struggle. After a very long wait of several months we were finally sent a copy bound upside down which was returned. Again, we waited a matter of months before this was replaced. The IIC office also had to wait some time, although not quite so long as we had to, for the arrival of the review copy which is now in my hands. Perhaps 'patient customers' should be mentioned among the target markets on the back cover!

A first glance at this collection of papers on Egyptian blue (Josef Riederer), orpiment and realgar (Elisabeth West FitzHugh), indigo and woad (Helmut Schweppe and John Winter), gamboge (John Winter), Vandyke brown, Cassel earth, Cologne earth (Robert L. Feller and Ruth M. Johnston-Feller), Prussian blue (Barbara Berrie), emerald green and Scheele's green (Inge Fiedler and Michael Bayard), chromium oxide greens, chromium oxide and hydrated chromium oxide (Richard Newman) and, finally, titanium dioxide

whites (Marilyn Laver) served to confirm that the new book did not diverge from the structure of the first two volumes in the series.

I have grown accustomed to the peculiar mixture of papers which characterizes these books. Typical for these volumes is a combination of entries relating to current and archaic names, mineralogical data, manufacture, and identification methods, together with a large number of references. I am also used to the fact that entries on the history of use of a particular pigment are frequently separated from the occurrences by long, sometimes very long, chapters on general pigment properties, composition or identification and characterization. In Volume 3, Elisabeth West FitzHugh has maintained most of these traditions.

Each of the papers gathers thousands of facts, sentence by sentence, and therefore neither reading nor, for that matter, reviewing them is particularly easy. How do I use my three volumes of *Artists' Pigments*? I must confess that I often simply 'handbook' (Nick Dorman, helping me to improve my English, did not like this term) in connection with enquiries which are of actual relevance to our research. A good deal of such consultation finally resulted in this review. Which topics are of greatest interest to me? Our current and, I suppose, future financial situation, not to mention the difficulties of placing a nuclear reactor between the Alte Pinakothek and the Neue Pinakothek, would seem to preclude the possibility of us acquiring an infrared microscope. I therefore usually skip the chapters on neutron activation and infrared spectroscopy. Instead, I prefer to concentrate on those chapters which relate to the history of use, terminology, historic recipes, unedited descriptions and accounts of trade and prices. The *Artists' Pigments* series, including the reviewed volume, is of indisputable value for an appreciation of such subjects. It does not provide all of the answers to all enquiries but it constitutes a good starting point.

Let me illustrate this point. With the exception of Jo Kirby's 1993 paper [2], there used to be little really useful literature concerned with Prussian blue. This situation has now changed thanks to the concise contribution from Barbara Berrie. However, the paper does not cover the first obscure years between Diesbach's invention around 1704 and the mid 1720s when the first occurrence of the pigment on paintings has been reported. Barbara Berrie calls this a shrouded mystery! The mystery is all the more amazing as the following statement was made

by Minerophilo in his *Neues und Curieuses Bergwercks-Lexicon* (Chemnitz 1730). In this he mentions:

'Blaue Farbe, Berlinisch-Blau ist eine neu-erfundene und aus Ochsen-Blut gemachte Mahler-Farbe . . . so hat ein glücklicher Erfinder 1704 diese Farbe in Berlin ausgedacht, welche beynahe so gute Wirkung als das Ultramarin thut, auch [in] satsamer Menge und wohlfeil zuhaben ist' (p. 122)

Obviously, therefore, Prussian blue was already cheap and freely available by 1730. The earliest incidence of the pigment on one of our German paintings occurs on a Johann Evangelist Holzner painted in Augsburg in 1731 [3]. I suppose that further research would lead us back into provincial Berlin of the eighteenth century via its nowadays difficult landscape of libraries, archives and war losses. On our way, we would stroll along the Ehrengitter (fence) of Charlottenburg castle, which was originally painted with Prussian blue in 1712/14 [4]. A third early occurrence is in a painting by Jan Jost Cossian from 1723 [5]. The fact that the pigment is present on this painting supports Barbara Berrie's view that it was available from Joan George Collazius in the Netherlands who obtained his Prussian blue from a 'Mr. Mak from Leipzig'. Who was this Herr Mak? What do we know about early pigment fabrication, not only the fabrication of Prussian blue? Why are our earliest recorded occurrences on German paintings so much later than those on Dutch paintings? A great deal is still shrouded in mystery, Barbara!

The paper on orpiment and realgar by Elisabeth West FitzHugh is 'composed' in accordance with the Gettens tradition. Widely covering use and occurrence from the Far East through Iran to Tintoretto's Venice, the paper addresses all aspects in an exemplary fashion. The paper has been written at the end of a period where a sense prevailed that the field of artists' pigments had been completely covered. The generation of Rutherford J. Gettens, Hermann Kühn and Joyce Plesters cast long shadows over subsequent research and it is only in the last few years that fresh observations have begun to gain some ground. It must be reported that the twins orpiment and realgar have been joined by a so far unknown triplet, pararealgar. Following the small technical note by Marie-Claude Corbeil and Kate Helwig from 1995 [6], cited in her paper by Elisabeth West FitzHugh, we were able to detect the yellow pararealgar on a couple of paintings. Unfortunately, it turned out that the two X-ray diffraction reference films which we have been using now for ages showed mixtures of orpiment, realgar and pararealgar but had been

labelled Auripigment and Realgar. All of the cases where these pigments were identified must now, unfortunately, be rechecked. This task is complicated further by the fact that the line position is not always so clear as we might wish. The mission is ongoing.

As with the previous volumes, all of the material from Volume 3 has been written by scientists. This is good solid stuff with quality photomicrographs, energy-dispersive spectra and diffraction powder patterns. Unfortunately, no reflectance spectra are given for the near infrared which is of use for imaging applications. I also regret the absence of Raman spectra. I do not know whether such expectations are in keeping with the times. The more time that I spend in this peculiar profession, however, the more firmly I feel that scientists should regard all of their varied scientific methodology as their private 'toolbox'. At the time of the pioneers, Gettens had good reason to illustrate the X-ray patterns. Today, though, most of the relevant materials are incorporated within commercially available databases or are part of the software used. These are now an established part of our 'toolbox' and, as such, may be taken for granted. The contents of this scientific 'toolbox' are of little interest to the professions which surround us; they interest neither artists nor art historians, conservators, curators or connoisseurs. Do you remember the target audiences mentioned on the back cover?

This 'toolbox' spirit pervades some of the contributions at the expense of the historical background. In the chapter by Richard Newman relating to chromium green, for example, the secondary literature on the history of the use of the pigment did not lead the author to his goal. This reliance on later literature is not, however, restricted to this author. Many of the contributors make use of publications by Wehlte, Gettens and Stout, Kittel, Patton, Doerner or Eibner, some of which authors did not structure their arguments in a particularly historically conscious fashion. Why, instead, do writers not prefer to shed light on their subjects with the help of contemporary source material? I recently wrote an article about the Barbizon painters, about their toolboxes, the contents of their *boîtes de campagne*, and the pigments which they used. A glimpse into the French literature of the time revealed a statement by Arsenne who reported in 1833 that one could find 'les beaux jaunes d'antimoine et le vert émeraude de M. Pannetier' at the colour merchant Colcomb-Bourgeois. The passage is of interest in that it gives an early date for the occurrence of *vert émeraude*, hydrated chromium oxide green. This adjusts the date of 'about 1838' suggested by Richard Newman in his text and it also corrects the author's claim that the term *vert*

*émeraude* 'dates to about the mid-nineteenth century' (p. 274). I might add that the earliest occurrence of *vert émeraude* which we have recorded was from 1835 [7, 8].

With respect to other occurrences, it was no great surprise to find that Volume 3 lists only a few confirmed findings of rare pigments. Numerous confirmed findings have, indeed, been established by my institution, for instance in Hermann Kühn's 1969 catalogue of the Schack Galerie, and by others, such as Joyce H. Townsend in her work on Turner (not to mention the other quietly contributing back-up armies...). Firm occurrences of, for instance, indigo, madder, gamboge or Scheele's green remain nevertheless exceptional if only because of the uncertain criteria deployed in their identification. It is one of the merits of this volume that those short chapters relating to identification criteria are written with honesty and, in most cases, they clearly arise out of practical experience. These criteria, however, may not always fit earlier confirmed occurrences of pigments quoted in the papers. How many of these earlier cases would withstand scrutiny according to the new, sometimes rigid, criteria? To return to Scheele's green, Inge Fiedler and Michael A. Bayard clearly point out that a safe analytical differentiation between Scheele's green and emerald green poses problems. This is why Kühn once carefully described it as copper arsenite. Prior to 1822, occurrences refer either directly to *Schweinfurter Grün* produced in Sattler's Farben und Bleiweiß Fabrik or to Scheele's green. As mentioned by the authors, Schweinfurt or emerald green became widely available after this date. I have, thus far, been able to identify fewer than 10 occurrences of copper arsenite on paintings from before 1822. In most cases mixed with yellows, this pigment is to be found on early German paintings, for example works by Josef Anton Koch from 1815 [9], by Johann Georg von Dillis from 1818 [10] or by Friederich Overbeck from 1821 [11]—in each case the paintings concerned were executed in Rome. This would seem to be another shrouded mystery!

The final paper, which discusses titanium dioxide, poses a number of problems. Firstly, thanks to a hint by my esteemed right hand, Andrea Kaser, we realised that in Fig. 14 on page 327 the X-ray diffraction patterns have been reversed: A shows rutile not anatase, B vice versa. Secondly, the article warrants praise as the first review to cover most aspects relevant to this important pigment. About 10 years ago, Marilyn Laver wrote to me requesting accounts of occurrences which we had been able to identify. I declined this request because I also intended to publish material on the subject. As a result of this, her account lacks an early example of

anatase identified from the ground of a painting by Max Beckmann from 1929 [12]. This date perfectly accords with those given by Marilyn Laver in Table 3 and it reflects the delay between the date of discovery and the appearance of the pigment on the artists' market. What is the case with rutile? I am hesitant to discuss this question because I have learned, over the years, that our profession is in possession of information which ought to remain confidential. I have, on many occasions, acted as an expert witness in law cases and I have thereby learned that titanium dioxide and the synthetic organic pigments play a key role in the identification of fakes. In many law cases these pigments act as life-buoys! As soon as their data are published, these pigments are either studiously avoided or 'correctly' implemented by professional forgers. We are today confronted with forgeries in which the forgers, with ever increasing frequency, obviously avoid using 'impossible' pigments. Should this development continue, only media analysis will be of any use in unravelling fakes in a few years time. This will be bad news for expert witnesses, cheated burghers and art dealers. Perhaps 'art forgers and bad boys' should be included among the promising markets on the back cover!

In conclusion, to quote Jonathan Ashley-Smith, 'Let's be honest':

- (1) Thanks to the index, this collection of papers is more than a book, it is a real handbook.
- (2) I stand by my earlier observation that in some of the contributions the contents of the 'toolbox' have simply been emptied out onto the table. Can this satisfy the markets mentioned on the back cover? That said, the editor of this volume was honest enough to mention the 'conservation scientist' as the ultimate market. I think that this audience should be mentioned first in Volume 4!
- (3) The larger the number of pigments covered in the series and the more these accounts move into the twentieth century, the more I am convinced of the validity of my ethical concerns. How can we promote research in our field and encourage colleagues to undertake basic necessary research without imparting too much information to the wrong people?
- (4) A few days ago, I asked a young colleague for his opinion regarding this volume, which he was working with at the time. He responded that the series is a 1960s concept. Given that I am from the 1950s, I didn't reply to this, but I feel, in some ways, that he is correct. The more we move into the new millennium, the less appropriate the series concept of the 1960s will

become [13]. Remember the 'toolbox spirit', it is time for a change.

- (5) All in all, the overwhelming amount of information condensed within this volume makes it an indispensable aid for scientists working in our field. This will encourage future work and, possibly, further remarks like those which I could not resist. I expect this volume will also become one of my top one hundred books.

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## References

- 1 *Maltechnik / Restauro* 93 (1987) 51–52.
- 2 KIRBY, J., 'Fading and colour change of Prussian blue: occurrences and early recipes', *National Gallery Technical Bulletin* 14 (1993) 63–71.
- 3 'Der Heilige Joachim', signed and dated 1731, Bayerische Staatsgemäldesammlungen München Inv. No. 4568.
- 4 RICHTER, E.-L., Stuttgart, personal communication.
- 5 'Der Mittag', signed and dated 1723, Bayerische Staatsgemäldesammlungen München Inv. No. 6524.
- 6 CORBEIL, M.-C., and HELWIG, K., 'An occurrence of pararealgar as an original or altered artists' pigment', *Studies in Conservation* 40 (1995) 133–138.
- 7 BURMESTER, A., and DENK, C., 'Blue, yellow and green on the Barbizon palette', *Zeitschrift für Kunsttechnologie und Konservierung* 13 (1999) 79–87.
- 8 BURMESTER, A., and DENK, C., 'Comment ils inventaient ces verts chatoyants? Blau, Gelb, Grün und die Landschaftmalerei von Barbizon' in *Malerei der Natur und Natur der Malerei*, ed. A. BURMESTER, CHR. HEILMANN and M.F. ZIMMERMANN, Klinkhardt & Biermann, Munich (1999) 295–329.
- 9 'Heroische Landschaft mit Regenbogen', signed and dated Rome 1815, Bayerische Staatsgemäldesammlungen München Inv. No. WAF 447.
- 10 'Blick auf den Quirinal', Rom 1818, Bayerische Staatsgemäldesammlungen München Inv. No. 11469; see also CHR. HEILMANN (ed.), *Johann Georg von Dillis*, catalogue, Munich (1991) plate 130, p. 269.
- 11 'Vittoria Caldoni', Rome 1821, Bayerische Staatsgemäldesammlungen München Inv. No. WAF 757.
- 12 'Champagner Stilleben', 1929, Bayerische Staatsgemäldesammlungen München Inv. No. 14379; see also B. HEIMBERG, 'Beckmann's painting technique' in *Max Beckmann Retrospective*, ed. C. SCHULZ-HOFFMANN and J.C. WEISS, catalogue, The Saint Louis Art Museum & Munich (1984) 129–136.
- 13 After the death of R. J. Gettens, the concept was further developed and outlined by Robert L. Feller; see R.L. FELLER, 'A project to prepare monographs on ten artists' pigments' in *ICOM Committee for Conservation 4th Triennial Meeting, Venice (1975) 75/21/6*.

MARY-LOU FLORIAN, *Heritage Eaters: Insects and Fungi in Heritage Collections*, James & James (Science Publishers) Ltd, London (1997) ISBN 1-873936-49-4.

The increasing interest in prevention of pests in museums collections meant that the new book *Heritage Eaters* by Mary-Lou Florian was eagerly anticipated. The author is a well-known and respected figure in the world of conservation in both her native Canada and in other countries. In the past she has made significant contributions to conservation literature in the field of biodeterioration.

The book is subtitled 'Insects and fungi in heritage collections'. The first chapter 'Environmental parameters' serves to cover both fields and the remainder of the book is organized in two distinct sections on insects and fungi. The insect section is 66 pages in length and takes the reader through the entomological topics of classification, exoskeleton, tracheae and the anatomy and biology of insect pests as egg, larva, pupa, nymph and adult.

The insect biology is very detailed and is more reminiscent of an entomological textbook than a guide to pests. The section on eggs, for example, contains some fascinating facts and excellent pictures. Larvae are dealt with in a similar manner with some useful line drawings of the major pest species. There is a complex key for identification which could be very difficult for a non-entomologist to use as many entomological terms are not defined or explained. Although the drawings of Dermestid beetle will be useful to aid the identification of specimens caught in museums, I question the value of all the drawings of Anobid larvae. They are difficult to identify, even by a trained entomologist, and I wonder how many people have ever actually seen *Stegobium* larvae? The drawing of the *Anobium punctatum* larva is like an escapee from 'Alien' and looks nothing like a live larva. The section on pupae is also well illustrated but the inclusion of pictures of bee, ant and butterfly pupae seems superfluous.