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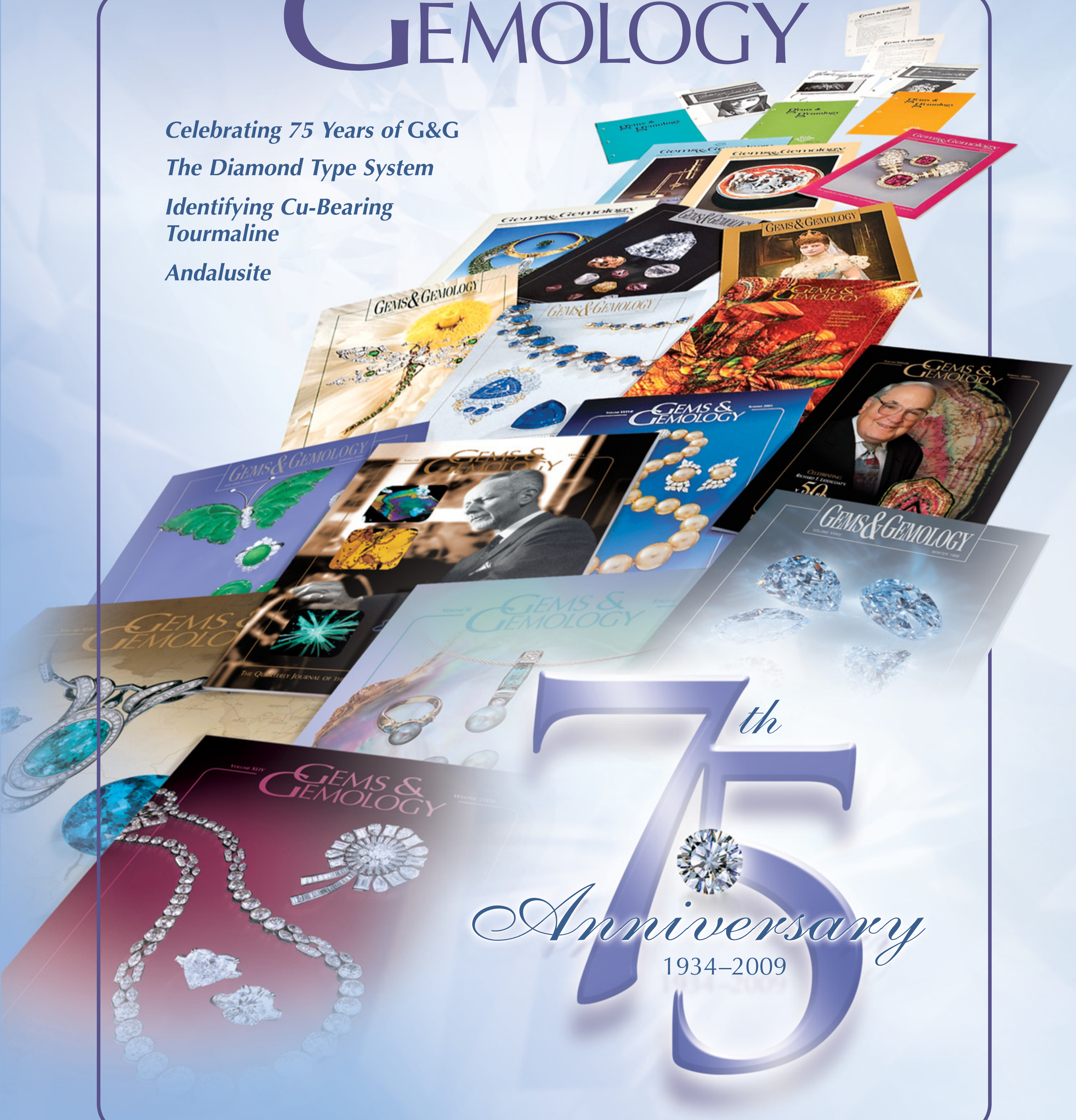
GEMS & GEMOLOGY

Celebrating 75 Years of G&G

The Diamond Type System

Identifying Cu-Bearing Tourmaline

Andalusite



THE QUARTERLY JOURNAL OF THE GEMOLOGICAL INSTITUTE OF AMERICA

I personally think not, considering the high amount of UV emission in this proposed standard lighting environment, unless one also includes on the grading report a letter grade determined in a similar standard viewing environment with no UV component.

I was shocked when I first discovered in 1995, by shielding the Verilux lamps in the GIA DiamondLite with a clear Makrolon plastic film (which acts as a UV filter), that stones with very strong blue fluorescence could appear three or four letter grades lower in color. Similarly, after sharing my findings and offering others some Makrolon film for their own experiments, several of my colleagues and former associates were as shocked as I was to see these dramatic color shifts in strongly fluorescent diamonds. I believe this to be a very significant issue in the accurate color grading of D-to-Z diamonds, and I cannot accept GIA's recommendation for their standard viewing environment.

As a consultant to the World Gemological Institute in Israel from 2005 to 2007, I oversaw that lab's transition from the GIA DiamondLite (DL) to the GIA DiamondDock (DD) as the standard environment for color grading. During the transition, over a three- to four-week period, all stones were observed in both environments to check for any discrepancies. As a UV filter was used with the DL to grade diamonds with medium or stronger blue UV fluorescence, we also used it with the DD. Because the distance from the lamp to the grading tray is greater in the DD than in the DL, one can imagine that the UV component might be somewhat reduced. We found that stones with medium or stronger blue fluorescence had the same color in the DL and the DD when viewed without a UV filter. They shifted to the same lower grades when examined with the filter. It should be noted that the Verilux lamps in the DD are thicker and have more than twice the wattage of the lamps in the DL.

I think the GIA DiamondDock has made significant improvements over the DiamondLite, and, except for the issue of the high UV emission from its Verilux lamps, it makes a very good standard viewing environment for diamond color grading. It is larger and more grader friendly; it has a neutral gray background for better color discrimination and less grader eye fatigue; the distance from the lamps to the grading shelf is greater (from approximately 5 inches in the DL to approximately 7 inches in the DD); and it provides a vastly improved grading tray. This is a large, very white, nonfluorescent plastic, pivotable, V-shaped tray that will hold a complete master set of 10 to 12 stones and still have plenty of working distance between stones for accurate color discrimination.

I'll conclude with the description of a diamond my laboratory examined in October 2008: a 0.89 ct marquise brilliant with very strong blue fluorescence. In the DL without a UV filter, the stone was graded table-down as a high D. In the face-up position, compared to the face-up appearance of a 1.0 ct E master stone, the E master looked very slightly yellow. But with the UV filter in place, when graded table-down, the color grade shifted to a low H. In the face-up position, because the diamond was a marquise brilliant (a fancy cut that will generally show more color face-up than a round brilliant of the same size and bodycolor), it was very slightly less yellow than a 1.0 ct J master in its face-up position, and considerably more yellow than the 1.0 ct H master. The diamond was also examined in a DiamondLite modified by Dazor Inc. to use LED lighting. We found that the diamond appeared the same in this LED lighting environment, in both the face-up and table-down positions, as it did in the DiamondLite with a UV filter.

How is such a diamond to be described and graded with consistency and accuracy? I have concluded that the best procedure for strongly fluorescent diamonds, going forward, would be to issue a report listing two different color grades in two different standard lighting environments, both similar to natural daylight, but one with and one without a UV component (of course, natural daylight has a UV component, but the strength of that component differs significantly from direct sunlight to northern, indirect daylight). This additional information would be useful to the owners of strong blue fluorescent diamonds, alerting them to the fact that the diamond may look different in different lighting environments.

My lab graded the 0.89 ct marquise-cut diamond as G color, as in our opinion this was a fair compromise. I wonder how the GIA Lab would grade it. How is this diamond, and how are other strongly fluorescent diamonds, to be valued? Based on the higher color grade, with a large deduction for the strong blue fluorescence? Or based on the lower color grade, with a large premium for the strong blue fluorescence? Personally I prefer, and professionally I practice, the latter.

Thomas E. Tashey Jr.
Professional Gem Sciences
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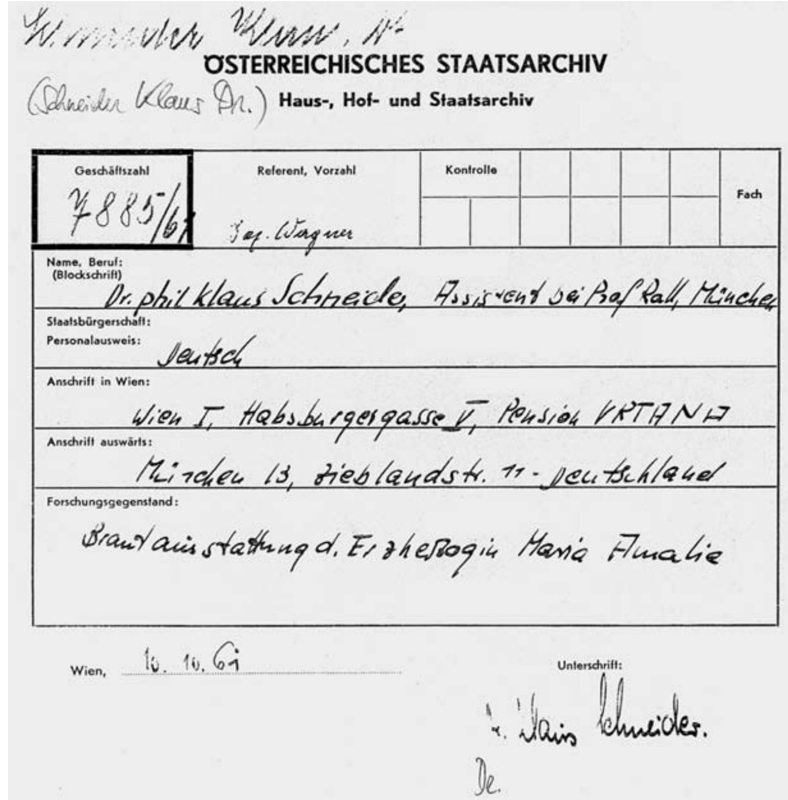
MORE ON THE WITTELSBACH BLUE

In our recent article on the Wittelsbach Blue (Winter 2008, pp. 348–363), we noted that despite "exhaustive efforts" we had been unable to locate the "Dr. Klaus Schneider" whose research was the basis for much of K. de Smet's book, *The Great Blue Diamond* (1963). This work has been used as an important source for historical information on the Wittelsbach Blue by many authors (e.g., Tillander, 1965, 1996; Heiniger, 1974; Legrand, 1980; Khalidi, 1999; Balfour, 2001; Bari and Sautter, 2001; Bharadwaj, 2002; Manutchehr-Danai, 2005; Erichsen, 2006; Christie's, 2008). During our research, however, we discovered that many of the statements therein had no archival basis, and we sought to contact Schneider or at least review his records in hopes of clarifying these inconsistencies. Although we had met with no success at the time the *G&G* article went to press, we wish to report that further work has finally cleared up this mystery.

Some background here is useful. As we discussed, de Smet's book was commissioned by Jozef Komkommer, who bought the diamond in 1961. In it, Schneider is described as a "final-year student of history" and "Dr. Klaus Schneider," whom an associate of Komkommer's recruited from a Munich student work organization to assist with the book.

Our initial research determined that Schneider sought access to the Bavarian Secret House Archives (BSHA) in Munich in September 1961. Schneider's research proposal gave his Munich address (Zieblandstrasse 11), his student status ("stud. phil.," or student at the faculty of philosophy) and his academic degree ("Diplom-Volkswirt" or diploma in national economics). Dr. Hans Rall, head of the Archives and professor at the Ludwig-Maximilian University (LMU), Munich, contacted the Wittelsbach Equity Foundation about Schneider's request, as only the head of the House of Wittelsbach, Duke Albrecht of Bavaria, could give such permission. In October 1961, Dr. Rall informed Schneider that his proposal could not be addressed because Duke Albrecht was on a vacation in the mountains. There is no evidence Schneider ever gained access to this archive.

Later in October 1961, Schneider visited the Austrian State Archive in Vienna. The record of his visit (figure 1) is quite interesting, because in it he is described as "Dr. phil. Klaus Schneider" and his signature ("Unterschrift") appears as "Dr. Klaus Schneider" at the lower part of the form. His Munich address also appears, as does an identification as "Assistant to Prof. Rall, Munich." This latter designation was not an informal or unimportant appellation: In the German university system, employment as a professor's assistant is one of the possible first steps to achieve the rank of professor.


ÖSTERREICHISCHES STAATSARCHIV

(Schneider Klaus Dr.) Haus-, Hof- und Staatsarchiv

Geschäftszahl	Referent, Vorzahl	Kontrolle	Fach
7885/61	Zeg. Wagner		

Name, Beruf: (Blockschrift) Dr. phil Klaus Schneider, Assistent bei Prof Rall, München

Staatsbürgerschaft: Personalausweis: deutsch

Anschrift in Wien: Wien I, Habsburgergasse 5, Pension VRTANA

Anschrift auswärts: München 13, Zieblandstr. 11 - Deutschland

Forschungsgegenstand: Brautausstattung d. Erzherzogin Maria Amalie

Wien, 10. 10. 61

Unterschrift: Dr. Klaus Schneider.

Figure 1. This page from the records of Schneider's visit to the Austrian State Archive in Vienna in October 1961 identifies him as "Dr. phil. Klaus Schneider" and the assistant of Professor Hans Rall at Ludwig Maximilian University, Munich. At the lower part of the figure his signature, "Dr. Klaus Schneider," is shown. The three statements were false.

From 2006 to 2008, we attempted in vain to locate any further records of Schneider's activities. LMU had no record of a student of that name. We contacted both Dr. Rall's widow and two former colleagues, none of whom recalled a Klaus Schneider working as Dr. Rall's assistant during 1961–1964 (though this is not terribly surprising after the passage of 40 years). One of us (JE) inspected Professor Rall's private library, which is now stored at the BSHA; we also requested records from the register of citizens of the City of Munich for a "Klaus Schneider" or a "Dr. Klaus Schneider" living at Zieblandstrasse 11 during this period. Nothing was found.

However, in January 2009, one of us (BB) came across a record of a "Johannes Nikolaus Paul Anton Schneider" at the register of citizens of the City of Düsseldorf. This was significant because *Klaus* is a German short form of *Nikolaus*. A new request to the City of Munich using this name was successful: a "Nikolaus Johannes Schneider" indeed lived at Zieblandstrasse 11 during this period. Unfortunately, we also learned that Schneider had passed away in 1996 in Wuppertal. His death certificate identifies him as "Dipl.-Volkswirt Johannes Nikolaus Paul Anton Schneider" (indicating that he had earned only an undergraduate degree, not a doctorate), born in Düsseldorf in 1935. In March 2009, author JE succeeded in locating this Schneider's ex-wife, who recalled that her ex-husband had indeed visited the General Archive of the Royal Palace in Madrid in 1962 as stated in de Smet. Thus, we can be certain that we located the correct individual.

A request to the LMU administration in March 2009 using the correct name at last succeeded in locating Schneider's student records. He entered LMU in 1959 to study national economics ("Volkswirtschaft") and graduated in 1963. On the basis of this, it is clear that Schneider performed his work for Komkommer in 1961 and 1962 not as a doctoral student in history but as an undergraduate student in economics. It is a fair question to ask whether Schneider misrepresented himself (again, see figure 1) in order to get the job for the historical research on the Wittelsbach Blue.

Bernd Beneke
City of Düsseldorf

Rudolf Dröschel, Jürgen Evers, and Hans Ottomeyer

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INCONSISTENCIES IN "THE FRENCH BLUE AND THE HOPE"

In their article presenting a new model of the French Blue (Spring *G&G*, pp. 4–19), Farges et al. used a newly discovered lead cast to confirm the possibility of the Hope diamond being cut from the French Blue. During their research, they created a three-dimensional model of the cast based on the shadow projections obtained by an Octonus Helium Rough 1:4 scanner operated by Matrix Diamond Technology. The dimensions of the model are 30.37 × 25.50 × 12.87 mm, which match those of the lead cast within 20 microns accuracy. (This model is available at www.octonus.com/oct/projects/frenchblue.phtml.)

From my analysis of the 3D model, I disagree with some of the statements made in the article. First, it is clear that its maximum diameter is actually 30.44 mm: The inclination of the maximum diameter to the direction of the length measurement is 4.4°, as illustrated in figure 1. If Brisson (1787) measured this true maximum diameter, and the edges of the lead cast have indeed been rounded and worn down over two centuries, then Brisson's data match the lead model in this dimension much better than the authors believed because of their assumption that Brisson measured a smaller, "non-tilted" diameter.

Next, the authors estimate the French Blue's dimensions as 29.99 × 23.96 × 12.11 mm on the basis of Brisson's mistakes in measuring the Regent diamond. However, the authors did not specify their correction factor and method. Taking into account that the correction factors for the Regent are in the 1.028–1.035 range, while the correction factors for the French Blue height and width used by the authors were 1.034–1.035, a height of 12.11 requires a correction factor of 1.055. Using the 1.034–1.035 correction factor, the height would be 12.35 mm.

Finally, to correct the weight of the French Blue based on the lead cast, the authors used historical data after Bion (1791) and Brisson (1787). The weight was used as a main criterion to determine the model's accuracy. The authors used results after Morel and converted 268⅛ grains (Bion) and 260 grains (Brisson) to 69.00 ± 0.05 modern carats, as their weight estimate; this estimate was used later to adjust the dimensions of the lead cast to match the diamond's presumed weight. To obtain the weight represented by the reduced lead cast, the authors used the weight of the lead cast (which is not given in the article), the cast's density (which was determined by chemical analysis of the metal surface), and the density of the French Blue according to Brisson. This resulted in 68.3 ± 0.2 ct. The discrepancy in the estimates was explained by different factors of the lead cast's production and storage. As a result, the conclusion was made that the lead cast models the French Blue well.

However, there are several problems with this approach.

First, 268⅛ grains (Bion) equal 71.22 modern carats, while 260 grains (Brisson) correspond to 69.05 modern carats. The authors do not explain why different ratios were used for recalculation of grains into carats for the Bion and Brisson data.

Second, the 3D model developed on the basis of the lead cast obtained by an Octonus Helium Rough 1:4 scanner operated by Matrix Diamond Technology resulted in 71.4 ± 0.2 modern carats; this was not mentioned by the authors at all.

Third, the discrepancy between the dimensions of the lead cast and Brisson's data is as much as 0.6 mm, and the authors' data had a final error range of up to 1.5 mm.

Last, the chemical composition of the lead cast's surface could differ significantly from its internal chemical composition. If the authors chose not to rely on the weight calculated on the basis of the 3D model, they should have measured the lead cast volume by, for example, hydrostatic weighing. This would have provided a more reliable weight estimate to reduce the diamond density.

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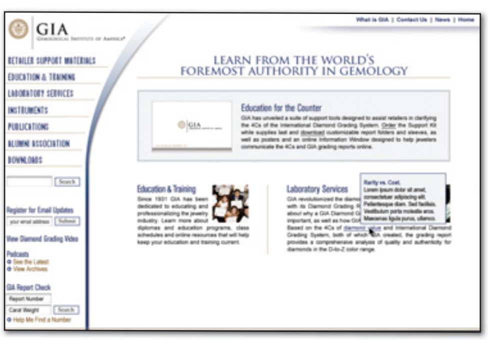

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