Greetings to you all. I am writing this Chairman’s Message not long after our very successful Color and Appearance Division RETEC, held on Marco Island this last September. This was a RETEC notable for a couple of reasons. First, was the inclusion of a special session called the New Technology Forum. To quote Sandra Davis, the Chair for the RETEC this year, "If you have attended a CAD RETEC in the last couple of years, you may have noticed that the Division leadership has been canvassing the attendees on a number of topics. The information learned from the surveys helps the Board of Directors plan programs. In response to feedback from attendees, this year we are adding a New Technology Forum. This offers the people who color plastics an opportunity to learn about the newest technologies as they become commercial. Suppliers to the coloring industry will be making brief (5 minute) presentations on the topics of their choice without the stringent rules associated with a regular technical presentation." In other words, we let suppliers to the plastic coloring industry speak for five minutes about anything they wanted. They could tout a new product, tell people why they are a great supplier, or just say "Hi! Come visit our tabletop display.” To be honest, we on the CAD Board didn’t know what to expect. We weren’t sure if people would find this troublesome, or indeed if they would sit through what might be viewed as commercial messages, or even worse, advertisements. To our pleasant surprise, the hour-long Forum was one of the best-attended presentations during the entire RETEC. In retrospect, it seems somewhat obvious that one reason technical people attend a RETEC is to learn about the latest and greatest pigments available in the marketplace. Still, it was a very pleasant surprise to learn that we had found another good way to bring value to our members and the RETEC attendees. The other reason the RETEC was notable this year was that it seemed to work very well for both buyers and suppliers. The CAD Board has worked very hard to understand what RETEC attendees like (and don’t like) about the existing structure of the RETEC. (Those of you who have attended and filled out one of the survey forms over the last several years know what I’m talking about.) We have made changes based on your feedback, and I believe that Sandra and her team used that information plus their experience to create a wonderful environment. To all of you who were part of this year’s RETEC, congratulations for a great success - and thanks for all your hard work. One other thing that’s going on soon will be elections to the Board of Directors. This is a group that works to further the aims of the CAD - education, successful RETEC and ANTEC presentations, the Newsletter, our scholarship endowment fund, awards for RETEC and ANTEC papers, and many other activities. On top of that, this is a great group of people who are wonderful to work with - trust me, I know this to be true. If you have ever thought you might like to be part of this fantastic group of people, and support the plastic coloring industry, please contact Sandra Davis of Dupont. Her email is sandra.p.davis@usa.dupont.com. We'd love to have you!

Bob Trinklein, CAD Chairperson

Robert Trinklein, CAD Chairperson
COUNCILOR’S REPORT

The Council met in Cleveland, Ohio on October 9, 2004. One of the major changes prior to this meeting was the provision of all meeting materials to Councilors in electronic format well ahead of the meeting. This allowed Councilors to be well-prepared for the meeting itself, as well as defraying the costs associated with the printing of a huge number of document hardcopies.

Structurally, the Council Meeting was held using a new format. Rather than holding a separate Council Committee of the Whole Meeting, the Council Meeting itself was modified to reduce repetition of reporting and to provide additional discussion time. President Winkler has since followed up with the Councilors to ask for their opinions on the effectiveness of this new approach.

A moment of silence was held in recognition of the passing of John T. Lutz, Jr. (SPE Fellow, Philadelphia Section and Vinyl Division), Nick Rosato (SPE Fellow, Eastern N.E. Section and Injection Molding Division), Bob Ringwood (SPE Fellow, Palisades Section and Vinyl Division) and Jim Courter (former Councilor, Southern Section, Marketing and Management Division).

Executive Director Susan Oderwald provided an update on staff changes and the new organization chart. She also informed Council of the launch of the re-designed SPE website (URL remains www.spe.org) and of an ongoing upgrade to the database systems used by SPE.

A financial update was provided through August. Income YTD reported as $3.76 million, with $4.12 million in expenses for a net YTD from Operations of $430,000. Net with rebates was 234,000. This compares to - $623,000 at this time last year. A projection of - $360,000 for year-end was reported.

In addition, a clarification of SPE’s insurance coverage was provided. From this came the need for Councilors to discuss the insurance needs of Divisions and Sections with their

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continued on page 3

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respective Boards. A summary on this topic was provided after the meeting by SPE. I have shared this with our Board. The CAD Executive Committee and Board will discuss this material at our January meeting in San Antonio.

A budget for 2005 was approved at Council. The elements in summary of this budget are a gross income of $5,820,000, direct expenses of $3,271,000, Staff and Overhead expenses of $2,470,000 and a net contribution of $79,000.

Update on the proposed “Pinnacle” Award, intended to replace the current Section and Division awards for accomplishment (Star, Pride, Outstanding) – this topic was presented at both the section and Division meeting, with inspired and energetic discussion resulting in both cases. This will be revisited at the January Council meeting in Atlanta. The draft proposal for “Pinnacle” has been provided to the CAD Board for additional comments. This will also be a topic at the January CAD Executive Committee and Board meetings.

A first reading of a proposed Bylaw Amendment (B-9.7) was held at the meeting. The proposed change would in summary require recording of votes by name when votes are taken on issues involving changes to fees, dues and/or rebates. This will have a second reading at the January Council meeting and will be voted on at that time.

Contributions presented at the meeting included $1,755 from the Chicago Section/Thermoset Division, $1,000 (for the SPE Foundation) from the Palsades Section, and $200 from the Rotational Molding Division (for the Student Travel Fund).

Respectfully submitted,

Austin Reid

Austin H. Reid, Jr,
Councilor, CAD
BOARD OF DIRECTORS MEETING MINUTES  
Tuesday, May 18, 2004  Best Western Hotel  Chicago, IL

OPENING/WELCOME  
SHARON EHR  
The meeting commenced at 8:30 am with a welcome from Sharon Ehr. She thanked Jim Figaniak for the work on the ANTEC 2004 program and Bob Trinklein on his work on the newsletter and the winning of a First Place in the Newsletter Contest.

ELECTION FOR BOARD OF DIRECTORS  
BOB TRINKLEIN  
Bob said the elections for the Board went very smoothly with 195 valid ballots being cast for the 11 people in the running. Joe Cameron, Tim Reilly, Brian West, Roger Reinicker, Johnny Suthers, Scott Heitzman and Aram Terzian were re-elected. Don Stengel of GE LNP and Steve Esker of Paramount Colors were the newest members elected.

Don was unexpectedly let go from GE LNP and his status is uncertain. Bob suggested that until the first meeting in August, Don remain as a BOD member and will check status at that time. Norm Uress would be next in line, in case Don can not continue.

Bob stated that ballots were cast from a number of foreign countries including Saudi Arabia, India, Pakistan, Iran and Angola.

SECRETARY'S REPORT  
DAVE JOHNSON  
Motion was made to accept the minutes as written. Motion was seconded. Minutes of the last meeting, 01/20/2004, were approved.

TREASURER'S REPORT  
BRUCE MULHOLLAND  
The Treasurer's report was presented. For the period of 12/30/2003 to April 30, 2004, beginning balance was $27,273.35, with deposits of $49,754.61 and expenses of $16,417.45, for a new balance of $60,610.51. Motion was made to accept the report. Motion passed.

COUNCILOR'S REPORT  
AUSTIN REID  
Austin stated that a spirited discussion took place at the ANTEC Councilor's meeting. The $300,000 line of credit had been paid off. Current membership stands at around 20,000 members. There was much discussion on the Rebates to Sections and Divisions. Plans are being made to restructure them with possibly 3 tiers of rebates. This would not go into effect until presented to Council and voted on.

Dave Arndt was in charge of revising the Star and Pride Awards. Again, no changes for this year, but possibly for next year.

ANTECs will be held in the following cities: Boston, Charlotte, Cincinnati, Milwaukee, San Antonio, Orlando and then back to Boston.

Austin said the Chairman of the Sections Committee will make up small task groups to get things done. Lots of things have been proposed, but very little gets done. So the idea of small task groups should help proposals to move forward. He also stated that he felt Karen Winkler was very organized and the Society should benefit from her leadership.

ANTEC TECHNICAL PROGRAM COMMITTEE  
BRUCE MULHOLLAND  
ANTEC 2004 (Chicago, IL) - Jim Figaniak and Sharon Ehr: Jim Figaniak reported that he had a lot of trouble with the ANTEC website and contacting speakers and got Sharon Ehr involved for help. Overall, the proceedings went well. Jim couldn't schedule a Board meeting room and Sharon stated she got mixed signals from the International Office on this. Sharon scheduled the Board of Directors Meeting at the Best Western.


ANTEC 2006 (Charlotte, NC): Sharyl Reid and Steve Goldstein: No activity at this time.

continued on page 6
COLOR & APPEARANCE DIVISION BOARD OF DIRECTORS MEETING MINUTES (CONTINUED)

continued from page 4

RETEC TECHNICAL PROGRAM COMMITTEE
SANDRA DAVIS
RETEC 2004 (Marco Island, Fl.) - Sandra Davis
"Back to the Island: Hot Colors Cool Plastics" Conference dates are September 19-21, 2004. Preliminary Brochure was at the ANTEC Meeting room. Sandra has all the papers she needs for this conference and thanked Johnny Suthers and Tim Reilly for their efforts. Johnny said that he has seven other papers on hold.

Frank Laviest is in charge of the Fishing but Sharon Ehr will take reservations on this as Frank was unexpectedly let go from his job. Scott Heitzman will oversee the Golf. There will be a "New Technology Forum" at this RETEC, which will allow suppliers a time slot for promotion of their products. Currently there are nine sponsors.

RETEC 2005 (New Orleans, LA) - Earl Balthazar
"You can't sing the Blues if the World is Full of Color". Dates are September 26-28, 2005. Earl is working on the "logo," and also gave out packets of information to his committee members. Will have the "Call for Papers" at the RETEC in Marco Island.

RETEC 2006 (Cincinnati, OH) - Bruce Mulholland/Scott Heitzman
Dates for Conference are September 17-19, 2006. Scott Heitzman has to get his budget and paperwork into International Headquarters to finalize the conference. He will get together with several Board Members to go over his proposed budget before he submits.

RETEC 2007 (San Antonio, TX)
The dates are tentative - October 1-2, 2007 and misses major religious holidays. Bruce Mulholland and Howard Kennedy checked the Hyatt and the Marriott. Both felt the Hyatt would be okay. Tim Reilly was instructed to contact the Hyatt and start contract negotiations to lock in the dates. We would then meet on January 10-11, 2005 in San Antonio, TX to approve.

EDUCATION COMMITTEE
BOB CHARVAT
EDUCATION: TERRA COMMUNITY COLLEGE
1. The budget battles continue for college institutions. This problem will continue for the foreseeable future. Developing new and/or modifying existing programs are very difficult if any new capital is required.
2. Terra Community College enrollments are up, which is a good sign.
3. The new college president, Dr. Marsha Bordner is well received - A great change from the previous administration.
4. A company in Kansas came to the Terra campus to interview candidates for positions. The visit was a feature article in the Fremont paper, which was very helpful to the program.
5. The proposal for Terra to help sponsor two out-of-town full-time students into the "Coloring of Plastics" program is still active, but moving slowly.
6. The scanning of historical CAD RETEC papers is at a standstill. The main issue to be resolved is that SPE would like to scan the preprints for the SPE online search program. However, the preprints would need to be torn apart and essentially destroyed. We are trying to resolve this issue since the preprints archived at Terra are the only ones known to exist.
7. From the last number of reports, the Terra lab is still looking for the following:
   A. A spiral flow injection mold.
   B. A lab size twin-screw extruder.
   C. Brabender Torque Rhometer extruder barrel.
   D. Multiple cavity color chip mold.

NORTHAMPTON COMMUNITY COLLEGE,
BETHLEHEM, PA
Tony Pentz is monitoring any activity and is still trying to revive interest in coloring as part of a plastics program. Any plastic program at Northampton suffered when the director passed away unexpectedly. Programs have not progressed since his death. We are prepared to support a viable program if and when it develops.

POLYMER ALLIANCE ZONE
Contact has been made with the executive director. More information should be available in the next few weeks.

COLORING OF PLASTICS "FUNDAMENTALS"
VOLUME I
The book is selling well. At this point a second printing is being planned.

VOLUME II
Help is still needed. For those under an obligation to prepare chapters for Volume II, manuscripts will be due in September. Notices will go out shortly via e-mail.

Help still needed:
1. Diazyl Phthalates Thermoset 2. Elastomers Thermoset
3. Liquid Epoxies, Polysters and Polyurethanes
4. Melamines Thermoset (Scott Heitzman may have an author)
11. Rigid Chlorinated Polynyl Chlorides 12. Silicones Thermoset

SPEAKERS LIST (BUREAU)
We hope to resurrect the program at ANTEC.

continued on page 7
PLASTICS MUSEUM
Reestablishing a relationship with the Museum is underway. The original contacts left the museum so we must start over. More as this develops. The final goal is having a Coloring Display at the museum, which should have some "hands-on" displays.

NEWSLETTER COMMITTEE
BOB TRINKLEIN/SHARYL REID
Barb was not present so Bob Trinklein gave report. Barb's first newsletter is out. He explained that Barb and Sharyl Reid had worked very hard and one thing to notice was that "Ad copy" had been cleaned up. Motion was made to present Joyce Bowman with a $100 as "Thank you" for the hard work she had put into the newsletter. Motion passed.

CAD WEBSITE
JOE CAMERON
Bill Dawes has kept the Website up-to-date. The up-link to Terra Community College has yet to be completed. Bill Dawes is ready to upload RETEC information to the Website. Sandra Davis is to send final corrected info. Still a question of using Pay-Pal for CC payments. To be discussed at RETEC Meeting. Bob Trinklein suggested that the last five years' Technical papers from the newsletter be put into an "Archive" on the website so they could be accessed. Sandy suggested the date of publication be at the start to show that the papers, while "new" to the website, had been published before.

ENDOWMENT COMMITTEE
JOHNNY SUTHERS
The current balance in the Endowment is $189,785.63. Bruce Mulholland and Johnny Suthers now have access to the account.

AWARDS COMMITTEE
TERRY GOLDING
Nominees for:
Fellow of the Society: STEVE GOLDBSTEIN
Sponsors: Austin Reid and Bob Trinklein.
Divisional Critique: Joe Cameron
Honored Service Member BOB TRINKLEIN AND BRUCE MULHOLLAND
Sponsors: Johnny Suthers & Austin Reid (for both Bob & Bruce)
(Bruce will ask Gary Beebe if he would also accept nomination)
Outstanding Achievement Certificate:
2004 - JOE CAMERON for his many contributions to CAD over the years.
2005 - Bill Dawes for recognition of his contributions as CAD Webmaster

COLOR ADVISORY GROUP
BRIAN WEST  Nothing new to report on J-1545.

PUBLIC INTEREST COMMITTEE
GARY CONRAD
Gary was not present. He had furnished each member with the data from the RETEC Survey.
Best days of the week: SMT = 47; MTW = 42 votes. Possible suggested cities were (more than 10 votes): Chicago, Toronto, Cleveland, New Orleans and Boston.
Preprint only - 9 votes  CD's only - 26 votes. CD/Preprints - 72 votes. Sales marketing presentations: 54 Yes 52 No

MEMBERSHIP COMMITTEE
ROGER REINICKER
Roger again distributed the "suspended members" list and asked again that each Board Member should look into their company's members and report back. CAD had 555 suspended members with 1,276 active members as of 04/2004. Roger handed out a report with the various Division memberships in our Division.

INTERNATIONAL COMMITTEE
BRIAN WEST
Brian reported that the "International Sections" are showing good growth with those Sections winning the "Growth Awards". International Sections comprised 15.6% of SPE Membership.
The EU Additives and Colors Group is also going strong. A delegation from China was held up by Homeland Security "red tape". They were to come to ANTEC but will now meet with SPE later this month. K2004 is in October.

OLD BUSINESS (ALL)
Technical Resource Committee
Suggested by Aram Terzian. Steve Goldstein had several topic suggestions and these would be "canned" speeches that could be given by CAD members at Section Meeting.
Roger Reiniker, Brian West, Joe Cameron, Bob Trinklein, Scott Heitzman and Bob Charvat offered to pursue the writing of the following:
Summer Meeting: After suggestions and much discussion,
♦ Basic Color Course explaining Color Theory.
♦ Coloring of Plastics which would explain what pigments are suitable for what polymers.
♦ Degradation Processes of Plastic explaining the weathering process
♦ Plastic Processing explaining the general processing conditions of particular plastic continued on page 18
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COLOR AWARENESS QUIZ

Q: Among adults, which color is free of cultural bias and liked worldwide?
A: Blue, according to several studies, adults prefer blue, followed by red and green.

Q: What is the first hue recognized by infants?
A: Yellow, at first, newborns only perceive light and dark, but then their eyes are drawn to the most luminous color in the spectrum - yellow.

Q: What color is the first to disappear from a child’s crayon box?
A: Red, universally toddlers favor red.

Q: What color are stop signs in China?
A: Green, China uses green for stop and red for go because red is the national symbol of communism.

Q: What color puts people in a bad mood if looked at too long?
A: Yellow is the most fatiguing color if viewed for long periods of time.

Q: What color goes by 100 different names in the Eskimo language?
A: White, to help them describe the nuances of ice and snow.

(from a paper given at ICE 2003 Impact of Color by Leslie Harrington & Ann Lechner)

A HISTORY OF PIGMENT USE IN WESTERN ART - PART I

By Helen Shelton, Dominion Colour Corp., Toronto, Ontario, Canada Dyers and Colourists.

Originally titled "A Colour Chemist's History of Western Art", this article was published in Review of Progress in Coloration, Vol 29, 1999, pp 43-64. It has been reproduced with permission of the Society of Dyers and Colourists.

Pigments are the raw materials of painting and art. They are insoluble particles that impart colour and some degree of hiding power over the surface to which they are applied. Pigments, and advances in their technology, have influenced the development and history of Western art since its earliest forms. Pigment creation has been paralleled to some extent by the development of paints and binders into which the pigments could be dispersed. This paper reviews the history of art from the perspective of the pigments used to create that art and the development and influence of science and technology in art. It is not intended to be an exhaustive review of every pigment ever used for this purpose, but aims to cover the most important and interesting colorants and to give the reader a taste of the long history of pigments.

Prehistoric Art

The earliest examples of art date from around 40,000 BC in the form of cave paintings. Primitive man tried to represent aspects of his environment in paintings or carvings, and these often depicted deer or bison, which were hunted for food. These images appear to have been created in a ritual way, many being overlaid one upon the other, possibly with the belief that primitive man could somehow gain power over his quarry by means of these representations. Good examples of such European Paleolithic art can be found in Lascaux in Southern France. These cave paintings have been carbon dated at around 15,000 BC.

Primitive Pigments

Primitive man used pigments from his natural environment in painting, thus the pigments found in different areas of the world tend to vary. It is thought that pigments were applied by two methods. The first was to mix pigment with animal fat and apply it as a paint with the fingers or a reed. The second method was to blow pigment powder onto the painting surface using a hollow tube.

Carbon black was usually found in the form of soot obtained from charred bones or wood, or charcoal from the wood itself, which could be used for drawing. Yellow and red earths were iron oxides in various states of hydration. These substances occur naturally throughout the earth's crust, so were probably used by all primitive people, and synthetic forms of yellow and red ochre are still used today. Brown earth was a mixture of iron and manganese oxides, again occurring in all parts of the earth. The shade of these brown earths could vary from red brown to almost purple, depending on the purity and exact oxide continued on page 12
The Color and Appearance Division (CAD) is committed to the publishing of at least three newsletters a year (four, if there is sufficient material to justify the extra issue). To that end, we would like you to think about the financial side of sponsorship of the newsletter. For the small donation of $300 per year, we offer a business card sized (2 x 3.5 inches) mention in our newsletter, which goes out to the nearly 1,500 members of the CAD, as well as other SPE division members. These are people active in every aspect of plastic coloring and additive technology. Larger sized spots are available at a commensurate increase in rate.

This year we are also initiating "Hot Links" on our SPE/CAD web page, located at http://www.specad.org for a fee of $300 per year. These Hot Links would allow visitors to our webpage to be one click away from your site!

In addition to this new service, we are also offering a discount for those who might wish to help sponsor both CAD news vehicles. The cost of a combined Hot Link/Newsletter sponsorship is $500 per year.

If you are interested in helping to sponsor either the SPE/CAD Newsletter or the CAD Website, or both, please contact:

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**COLOR SYMBOLISM BY CULTURAL**

This chart contains information on the cultural symbolism of various colors.

<table>
<thead>
<tr>
<th>Color</th>
<th>Cultural Significance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Red</td>
<td>China - symbol of celebration and luck, used in many cultural ceremonies&lt;br&gt;India - color of purity (used for wedding outfits).&lt;br&gt;United States - Christmas color when combined with green, Valentines Day when combined with pink, indicates stop (danger) at traffic lights.&lt;br&gt;Eastern cultures - signifies joy when combined with white.</td>
</tr>
<tr>
<td>Yellow</td>
<td>Asia - sacred, imperiel.&lt;br&gt;Western cultures - joy, happiness.</td>
</tr>
<tr>
<td>Blue</td>
<td>China - associated with immortality.&lt;br&gt;Colombia - associated with soap.&lt;br&gt;Hindus - the color of Krishna.&lt;br&gt;Jews - holiness.&lt;br&gt;Middle East - protective color.</td>
</tr>
<tr>
<td>Orange</td>
<td>Ireland - religious significance (Protestant).&lt;br&gt;United States - inexpensive goods, Halloween (with black).</td>
</tr>
<tr>
<td>Green</td>
<td>China and France - studies indicate this is not a good color choice for packaging&lt;br&gt;India - the color of Islam.&lt;br&gt;Ireland - religious significance (Catholic).&lt;br&gt;Some tropical countries - associated with danger&lt;br&gt;United States - indicates go (safe) at traffic lights, environmental awareness, St. Patrick's Day, Christmas color (red and green).</td>
</tr>
<tr>
<td>Purple</td>
<td>Western cultures - royalty.</td>
</tr>
<tr>
<td>Brown</td>
<td>Colombia - discourages sales.</td>
</tr>
<tr>
<td>White</td>
<td>Eastern cultures - mourning, death.&lt;br&gt;Japan - white carnations signify death.&lt;br&gt;United States - purity (used in weddings).</td>
</tr>
<tr>
<td>Black</td>
<td>Western cultures - mourning, death.</td>
</tr>
<tr>
<td>Saffron</td>
<td>Hindu - sacred color. (orange peach color)</td>
</tr>
</tbody>
</table>

From webpage [www.wired4success.com/symbolism.htm](http://www.wired4success.com/symbolism.htm)

**CAREER CLEARINGHOUSE**

To better serve our members, the CAD Board of Directors has agreed to establish an employment clearinghouse in the CAD newsletter under the following strict rules and guidelines.

You must be unemployed or have a firm separation date at the time the resume is sent. This is mandatory—no exceptions. Also, include a time limit on the availability of the resume.

Employers seeking new employees

Send your requirements by mail or fax to Bob Charvat at the address below. Indicate the length of time the new career will be available. The Clearinghouse Coordinator will, IN COMPLETE CONFIDENCE, advise either and/or both parties of any potential matches. NO RECOMMENDATION OR ENDORSEMENT BY EITHER PARTY SHOULD BE ASSUMED OR SUGGESTED BY ANY ACTION TAKEN OR NOT TAKEN BY THE COORDINATOR.

Companies seeking to fill openings/positions and persons seeking a new career

must send their job description or resume, respectively, to Bob Charvat, Charvat & Associates, Inc.<br>374 Bradley Road • Cleveland, OH 44140-1149<br>fax: 440-835-2011 • email: rcharvat@msn.com

**INVITATION TO ATTEND CAD BOARD MEETINGS**

The Color and Appearance Division regularly holds Technical Program Committee (TPC) and Board of Director (BOD) meetings at the ANTEC and the RITEC. In addition, a Summer BOD and TPC meeting are typically held about 6 weeks prior to the RITEC, and a Winter BOD and TPC meeting are held in early January. The Summer meeting is scheduled in various locations; the Winter meeting is typically held at the site of the RITEC that is a year and a half away. Any SPE/CAD members who wish to attend are welcome at these meetings. Contact the Division Chairman (see the back cover) for information on the location and times of any of these meetings.

Please join us!
Green earth came primarily from two clay minerals, celadonite and glauconite. These have a complex silicate structure containing aluminum, iron, magnesium and potassium ions, which give a dull-green colour. It was used less frequently than the other primitive pigments due to its relative scarcity. White pigments were obtained from chalk (calcium carbonate), and from crushing up animal bones (essentially calcium phosphate). The palette of the primitive artist was thus quite limited and contained only dull, earthy shades.

The Egyptian Dynasties

Egypt had the longest unified history of any civilization in ancient times and this extended from around 4000 BC to 300 AD, with a style of art that remained unchanged for nearly as long. At the start of this period, ancient Nile dwellers developed from hunters into agriculturists and formed early settlements. Chiefs of these tribes began to unite, and by 3100 BC the rule of Egypt was unified by the first pharaoh, Narmer. The earliest artwork, pottery and hieroglyphs date from that period. From 3100 BC, Egypt was ruled by a pharaoh who was considered to be a divine ruler by his subjects. The Egyptians believed in the afterlife and that the body should be preserved by mummification to ensure that the soul would live on. The likeness of a person was also preserved in writing, painting and sculpture. Painting and art followed very strict rules because they were not designed for enjoyment, but rather to perform the very serious task of preserving a person into the afterlife. The painting of ancient Egypt appears strange, it is angular and distorted, but Egyptian artists were merely trying to represent everything as it best looked. The human body was always painted the same way - the head was always shown in profile, while the eyes were shown from a frontal view. The torso was always shown from the front, while the limbs were represented from the side to preserve their movement. Feet were always shown from the big toe side, so Egyptians always appear to have two left feet.

The culture of ancient Egypt was very advanced in many respects. The pyramids and temples are testament to their architectural and engineering skills, but also illustrate the organization of Egyptian society. Most modern knowledge of this society comes from the relics, paintings and hieroglyphs found in tombs of the pharaohs and of other important nobles. Every aspect of life was recreated inside the tombs for the pharaoh to take with him to the afterlife. This left a clear record for archaeologists.

Egyptian Pigments

The important role of art in Egyptian life meant that a variety of new pigments were added to the prehistoric palette, including brighter pigments, and even the first manufactured pigments.

Natural pigments introduced by the Egyptians included malachite, azurite, cinnabar, orpiment and lapis lazuli. Malachite and azurite are deep green and blue minerals that occur in close proximity to each other. They are both basic copper carbonates that can be ground and washed to give good green and blue pigments. Cinnabar is a bright red mineral that, when crushed, provides an opaque, bright red pigment. It is a naturally occurring mercuric sulphide and was the first bright red pigment available to the early artist, although it is prone to darkening on exposure to light. Orpiment, a bright golden yellow mineral imported from Syria is a natural arsenic sulphide that is toxic, giving off poisonous fumes and a bad smell. This does not appear to have reduced its usage as a pigment, probably because it was the only bright yellow available. Lapis lazuli, a member of the sodalite group, is a blue mineral occurring in mountainous regions. The mineral is a deep blue colour, often flecked with gold from iron pyrites and grey silicates, which make the colour less pure. Lapis lazuli was crushed and used as a durable, intense blue pigment, but was also widely employed in jewelry and sculpture by the ancient Egyptians who valued it very highly indeed, making it the most expensive pigment in the artist’s palette.

The first blue pigment manufactured by the Egyptians was blue glass, or smalt. It was introduced in about 2500 BC and was made by heating sand with copper metal, copper ore and alkali, although cobalt was also probably used to produce the blue colour. The resulting glasses were used in decoration of sculptures and in jewelry, as well as being artists’ pigments.

Many early dyes were discovered by the ancient Egyptians, such as blue woad (Isatis tinctoria), indigo (Indigofera) and red madder (Rubia tinctorum), which all came from plants, and red carmine, which was produced from the kermes beetle. These dyes were converted into pigments by making lakes, a technology pioneered by the early Egyptians. Laking is the precipitation of a dye onto particles of an insoluble, colourless binder such as chalk or white clay. The Egyptians may have also produced lakes by complexing the dye molecules with metal salts such as aluminum from alum.

Woad and indigo were extracted from the leaves of their respective plants with hot water, and the laked pigments were made by scraping off the foam that formed on top of the extraction vessel. This foam was ground with chalk or some other binder to give a blue powder, which could be dried and

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used as a pigment. Madder was cultivated by the Egyptians. Dyes ranging in colour from pink to red, brown and purple were extracted from the root of the plant by an aqueous filtration process. The dried ground roots were mixed with water and treated in a series of stages with alkali, then filtered through meshes to extract the colouring matter. The red dye was converted into a lake pigment by precipitation onto a binder, although it is not clear whether the Egyptians actually used madder lake as a pigment.

Carmine, a red colorant mentioned in the Old Testament and by Pliny, was probably first used as a lake pigment as early as Egyptian times. It was obtained from the kermes beetle, which is native to Europe and Asia, and found on various types of oak trees. The female insect attached itself to the oak tree to lay eggs, and then both were collected just before hatching and killed with vinegar. The colour was extracted by pouring boiling water onto the dried insects to release the water-soluble kermesic acid, which was then precipitated with iron-free alum to give an insoluble lake pigment.

Painting Methods
The palette of the ancient Egyptian artist was considerably wider than in prehistoric times, but the Egyptians also created new methods of painting and applying colour to the tombs and walls they wished to decorate.

The ancient Egyptians, Minoans and Cretans all used fresco as a painting style, and this was probably invented either by the Egyptians or Babylonians before them. The technique of fresco is to paint onto lime plaster while it is still wet, or fresh. A sketch is drawn onto the penultimate layer of plaster, and design outlines are marked with dark paint wash. Then a fresh layer of plaster is applied over the top of the design in small sections, which are then painted. As the plaster begins to dry there is a reaction between the lime and air to form calcium carbonate, which causes a chalky film to form over the colorants. Fresco colours are very clear but have a slightly filmy, transparent appearance. The technique is very durable, and many examples are still found in Egyptian tombs. Pigments used for fresco were prepared by dispersing the powders in water and a natural, water-soluble binder, such as gum arabic, which is a tree gum. The mixture was then applied with a brush to the wet plaster and was somewhat akin to the modern watercolour paint. The Egyptians also used watercolour-style paints to create papyrus illustrations and hieroglyphics, but unfortunately very few of these survive.

Later the Egyptians began to use a new medium called encaustic painting. This term comes from the Greek enkaustikos, meaning to burn in. Pigments were mixed with beeswax and a resin and then heated to soften them. The warm, soft, coloured mass was then applied to the painting surface and burned in with a palette knife heated in a charcoal burner. Encaustic gave a hard, brilliantly coloured, durable finish, but unfortunately was particularly susceptible to water damage, so very little Egyptian encaustic survives.

Another very ancient painting technique was that of tempera, which was probably developed by the Babylonians and passed down to the Egyptians. In traditional tempera painting the pigment is carried in a medium of egg yolk, to which some vinegar may have been added. The paint was then applied with a brush, but had to be worked quickly as it dried fast. Tempera paints in Egyptian times were usually coated onto plaster, and surviving examples tend to be tomb paintings. Egg yolk is a natural emulsion of water, oil and lecithin, which dries very quickly, giving a matt appearance, and thus the tempera paint was really the distant relative of the modern emulsion paint. The yellow colour of the egg yolk was due to a carotenoid and did not affect the colour of the paint since it was quickly bleached by sunlight.

Ancient Greece
The Egyptian dynasties spanned an enormous age of history and influenced many other cultures and people but perhaps none more so than the society of ancient Greece. The Greeks particularly learned the lessons of art from Egypt and then built upon them to create a great artistic tradition of their own.

As Egypt became more open to the outside world in about 500 BC, the styles of art were seen more frequently in its neighbours, particularly on the island of Crete, which had a very advanced culture of its own. These ancient Cretans were actually the original classical Greeks, about whom very little is known. In about 1000 BC the ancient Greek civilization was invaded by warlike tribes from Europe, which precipitated great conflicts, some of which are recounted in the Homeric tales. The art and architecture of these new hybrid Greeks was initially primitive and rough, but in about 600 BC a shift occurred and these people began to build in stone and start a civilization of their own. Where the Egyptians built colossal temples reflecting the fact that they had just one divine ruler, the Greeks built smaller structures reflecting the lack of one supreme deity or ruler.

The real revolution in Greek art took place in the city-state of Athens where philosophy, theatre, politics and many other forms of expression were developed. These new Greek artists began where the Egyptians had left off, but

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they began to use their eyes rather than simply to follow a formula. Surviving paintings from around 600 BC (mostly in the form of pottery) show the Egyptian style being faithfully copied, but by around the fifth century BC the style had changed considerably. This Greek era gave us the first example of a foot being painted from the front view. 6 Although this sounds like such a small achievement, nothing of the kind had occurred in the previous 40,000 years of art history: it was a total revolution!

Greek art flourished but still used the Egyptian rules to some extent; clear outlines and knowledge of human anatomy were very much in evidence, but the old rules were no longer sacred. In 480 BC the temple of the Acropolis, which had been destroyed by Persians, was rebuilt in marble, and many great works of art were commissioned to adorn it. 7 Unfortunately very few of these works have survived because most of them were destroyed by Christians later in history, who considered it a religious duty to smash all 'graven idols'. The sculptures we do have are generally copies made by Roman art collectors 8 these statues, although beautiful, have tended to give the impression that Greek art was lifeless and cold, and portrayed people with vacant eyes looking slightly chalky. Nothing could actually be further from reality because the original statues were often made in bronze or wood being over 10 m high and were painted with bright colours and decorated with gemstones. The eyes of sculptures were created from precious stones and minerals to give the figures a lifelike image.

The time between 520 BC and 420 BC was one of newfound artistic freedom in Greece where people began to be interested in art for its own sake. 9 They began to collect art and criticize it, comparing various styles and works. The human body was portrayed with greater fluidity, and the Greek artists no longer had trouble representing motion as the Egyptians had done. Greeks of this era did not use real human beings as models for their sculpture or painting, rather they used the Egyptian rules of creating the perfect human from their knowledge of anatomy. No human being was ever as perfect as a Greek representation of the 4th century BC. It was not until later in Greek history, under the rule of Alexander the Great, that the concept of an individual portrait was devised. 10

Part 2, starting with Hellenistic Art, to be featured in the Spring 2005 Issue

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It's that time of year again - time to vote for your Color and Appearance Division representation. The people that you elect to the Board of Directors are the people that make things happen like the wildly successful CAD RETEC's, this wonderful newsletter and other activities that have lead to the repeated Outstanding Division awards won by CAD. They are the people that work behind the scenes to make it all possible for you.

Now you are thinking, "How do I make sure Board of Directors is made up of people that want to work to continue the successes of the past?" The answer is by voting thoughtfully in the elections each year. Even though the color industry is relatively small, it is impossible for each of us to personally know every person involved. As a result, when you get the list of candidates for the Board of Directors, it is likely that you do not know all of the candidates. That is the reason that a little biographical sketch is included for each candidate. This can help with the decision making process.

As you are thinking about your options, there are a couple several items to keep in mind. These include, but are not limited to, diversity of background, circle of contact and degree of previous involvement.

One of the reasons that the CAD has been so successful is the diversity of people involved in the organization. It is important that a group like the CAD have people with a broad range of perspectives in decision-making positions. This way, the broadest portion of the membership will be represented. This diversity can come from people working in different parts of the industry - i.e., material supplier vs equipment supplier vs consumer or it can come from people working in different job functions - i.e., R&D vs marketing. A combination of people with different background will assure that the membership of CAD is best represented by its Board of Directors.

Everyone has a network that has been built through his or her career. In some cases, the network is built based on contacts made during work at a customer interface. In others, it has been developed through the series of opportunities that built the career. This network, or circle of contact, is different for each person and in it lies another strength for the Board of Directors. It is important that the people on the Board of Directors have differing circles so that more diversity can be brought to the programs of the division.

When a person is elected to the Board of Directors, it is important that the person is interested in working for the good of the division. While it is impossible to know how hard a particular person will work when the person is not personally known, one way to estimate the person’s willingness to work is to consider the degree of involvement in the organization. Has the candidate presented papers in the past for CAD? Has the person been a moderator at a CAD conference? These are just a couple of questions that you can ask yourself.

These are just a few of the factors that should be considered while deciding who to vote for in the CAD Board of Director elections. Of course, each of us will make our decisions based on our own needs, so the most important thing is that you vote.

The Board of Directors is always looking for people interested in working on the board. So, if you are interested or would like more information, please contact any of the board members listed on the back of this newsletter. You will also be able to vote online - please go to www.specad.org and look for information on voting.
EDITOR'S NOTE

Hello to all! You will notice that this issue is jam packed with great articles and other items of interest. Please check out the pieces on Color Awareness and Color Symbolism by Culture; both are very intriguing for those of us working with color everyday. This issue is also the start of a multi-part article on the History of Pigment Use in Western Art. The article is chock full of great details and references. Part one takes us from prehistoric cave art and pigments up to the art and pigments used by the ancient Greeks.

Please take the time to peruse through our advertising pages. Besides providing support to help offset the cost of the newsletter production, these folks bring a wealth of knowledge and information to the table.

I would also like to add my pitch for support of the CAD. Bob Charvat has an invitation to anyone who would like to participate as a speaker at the local or divisional level. Please just fill out the application on the next page (page 19) and drop it back to Bob. Please participate by either voting or running for the board in the upcoming election. Everyone's individual participation makes our division successful.

I again would like to take this opportunity to solicit the membership for articles of interest in the area of color. If you have read a really good piece in a technical journal or found and interesting site on the web that you would like to share, please forward the information onto me at barbara_parker@flexprod.com.
CAD DIVISION SPEAKERS APPLICATION

Please fill out and submit this form if willing to speak at Section/Division meetings.

Return to Bob Charvat by e-mail rcharvat@msn.com (preferred)
Or Fax: 440-835-2011
Or (last choice) 374 Bradley Road
Cleveland, Ohio 44140-1149

Signed ___________________________ Date ___________________________ Division: CAD-OTHER

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Name: ____________________________________________ Telephone: ___________________________
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TITLE AND TOPIC OF PRESENTATION(S) AND ABSTRACT(S):

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SPEAKER REQUIREMENTS

1. Speaker travel and other expenses company supported? □ Yes □ No

2. If "no" to #1, give details and requirements:

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