FOREWORD

Having taught at RIT’s School of Printing Management and Sciences for over 17 years, I have had numerous opportunities to meet many professors and visitors from European communities. As a result, I developed a desire to reciprocate their visits in order to learn the European system of higher education as it pertains to printing technology and research.

The trip to Europe all became a reality with a letter that I received in March of 1997 from Mr. Leon Hart, Executive Director of the Gravure Education Foundation (GEF). I was pleased to learn that I had been appointed by the GEF Board of Trustees as the 1997 GEF Exchange Professor. The GEF Exchange Professorship is an open competition, whereby all full-time teaching faculty are eligible to apply for a grant of $5,000 to travel to Europe. It was designed to sponsor a professor from the United States to visit the gravure industry and graphic arts research and educational institutions in Europe to help enhance the educational world of printing. Professor Jean Rosinski of Western Michigan University was the first GEF Exchange Professor in 1995.

TRIP PLANNING

A successful trip always begins with a good plan, and I was fortunate to have many people offering their assistance along the way. In particular, Mr. Leon Hart and Mr. Warren Daum of GEF and Ms. Cheri Kasunich and Mr. Greg Tyszka of GAA were all very helpful in providing contacts in the European gravure industry. I began e-mail and letter correspondence with my European hosts in May, and the trip itinerary was finalized by the beginning of November.

The journey was a tour of seven countries, beginning on Nov. 16 and ending on Dec. 16, 1997, with visits scheduled to ten hosts.

As shown in the map of Europe (Figure 1), my month-long trek started in Helsinki, Finland, and ended in Rome, Italy. In Milan, I was pleased to have my wife, Loyi, join me, and together we finished the tour, with our last stop being sightseeing and relaxation in Rome before returning home.

During my visits, I presented a number of seminars for my hosts on color reproduction and color management related topics. These seminars proved to be an effective means of sharing and exchanging technical information on matters of common interest.

In planning the trip, I conceived of the idea of documenting my journey on the World Wide Web as I traveled, so I brought a number of high-tech devices with me. Among them were a Mac PowerBook 3400/200, a Kodak digital camera DC-120, and an IBM Internet Connection account. Both the 3400 and the DC-120 were wonderful tools for capturing and preparing digital images for the website. The IBM Internet Connection turned out to be a disappointment, though, because of the quality of the phone lines through hotel switchboards. Nevertheless, I managed to place a number of trip
highlights on the WWW with Internet access from the hosts that I visited. Each trip highlight is a PDF file consisting of 20 or so captioned digital images. These images are still available for viewing on my web site: www.rit.edu/~rycppr. You have to imagine this! My father, who lives in California and at the age of 79, was able to view full-screen color images from his computer at home less than 24 hours after the images were captured. I was able to exchange e-mail messages with him along the way, and he was totally thrilled with the technological wonders.

THE TRIP

In this two-part article, I wish to share my exchange experiences in terms of the places I’ve been, the people I’ve met, and the gravure cylinder engraving and printing establishments that I visited.

Helsinki, the capital of Finland, has a population of half a million people. As my Lufthansa flight landed, my initial view was of its blue harbor, with more than a thousand islands surrounding the city. My host, Dr. Simo Karttunen, picked me up at the airport on the afternoon of Nov. 17th and took me to Espoo/Tapiola, which is adjacent to Helsinki. A city in its own right, with a population of 200,000, it is where both VTT and HUT are located.

VTT is the Technical Research Center of Finland, a government-sponsored organization with the mission to “develop technology to improve both the competitiveness of industry and the basic structure of society.” Dr. Simo Karttunen belongs to the VTT Information Technology group where they conduct basic and applied research in information systems, telecommunications, multimedia, and printed communications. Anyone attending TAGA conferences knows that VTT has expertise in large-scale simulation of newspaper production management and distribution systems. I was impressed by a number of European Union (EU) projects that support the training needs of the European printing industries — specifically, the PrintSim and the PostPressSIM that were developed to utilize multimedia systems and computer simulation for learning printing processes.

HUT is the Helsinki University of Technology. Professor Hannu Saarelma is in charge of the Laboratory of Media Technology through which they offer M.S. and Ph.D. degrees in media technology, with emphases on imaging science and visual communication. My day-long visit at HUT proved to be very informative. While there, I was able to hear and to interact with many graduate students and research associates on their respective research projects (Figure 2). The scope of their research ranges from the study of visual noise in print, to automatic color image processing in a networked environment, to ink/coating interactions in the drying process. I was thoroughly impressed by the research strengths of Professor Hannu Saarelma’s Laboratory and the quality of the graduate students and research associates.

“Each trip highlight is a PDF file consisting of 20 or so captioned digital images. These images are still available on my web site: www.rit.edu/~rycppr.”

Figure 1. Joining me were Professor Hannu Saarelma (right) and his graduate students and research associates
As part of my stay at HUT, I was pleased to be able to offer a seminar on color management systems at the HUT Student Union. The Student Union (Figure 3) was designed by a famous Finnish architect, Reimer Pietila, using abundant granite rocks available from the surrounding areas.

I left Helsinki for Stockholm, Sweden, by an overnight ferry called the Silja Line. In many ways, Silja is a huge floating hotel — 700 feet long, 13 stories high, 1,000 cabins, and holding over 400 cars (Figure 4). I was greeted by Professor Jenny Moberg of KTH on the morning of Nov. 20th. Moberg, who was an Aller Foundation exchange student when she studied at RIT’s graduate school in Graphic Arts Systems, was my host in Stockholm.

KTH (Kungl Tekniska Hogskolan) or the Royal Institute of Technology is located near downtown Stockholm. It has an ivy-league campus atmosphere with a focus on engineering and research. Professor Nils Enlund is in charge of the Graphic Arts Technology program. Through his briefing, I got to know the educational process at KTH. A freshman would spend the first two and a half years studying basic science and engineering before he or she could select an area of specialization in either graphic arts technology, media production, or business development. The study of the specialization would last for one and a half years. The fifth year is devoted to the student’s thesis work which leads to an M.S. degree upon its completion. KTH also offers the advanced degrees of Doctor of Technology and Technology Licentiate. The former would take four more years of study and the latter even longer. A current, large-scale research project of theirs involves the analysis of production processes and methods for designing general models for global production tracking and management.

While in Stockholm, I met some folks at the Institute for Media Technology (IMT) and the Swedish Pulp and Paper Research Institute (STFI). Our discussions ranged from implementing the ISO 9000 quality system in the printing industry, to paper and printability testing. Because there was significant interest in understanding what the International Color Consortium (ICC) is and in learning how it might impact the graphic arts imaging processes, I gave a seminar on color management systems (Figure 5). In addition, I met with members of the TAGA Student Chapter at KTH (Figure 6). TAGA stands for the Technical Association of the Graphic Arts. I served on the TAGA Board of Directors and was intimately involved in establishing TAGA Student Chapters worldwide, so I was thrilled to meet with the group. Views were exchanged on how to utilize TAGA as a source of technical knowledge and contacts shared to pursue research and scholarship.

I spent my first weekend in Europe in Stockholm, enjoying the narrow streets, quaint shops, and cobblestone squares of the Old Town. I was impressed by the exhibits in the Vasa Museum, which houses a massive 17th-century warship that
ingloriously sank on its maiden voyage in Stockholm’s harbor. This 204 foot tall ship was raised to the surface in 1961, after 333 years on the harbor floor, and has been restored to its former grandeur.

I had hoped to see an opera while in Stockholm, but all the seats were sold out so, instead, I went to a Broad-
way show, West Side Story — performed by a Swedish group in Swedish. Since both the story and the music were familiar to me, the language presented no problem and I had a ball. Incidentally, I was able to withdraw cash from ATM machines on the streets with my VISA card; to buy Whoppers in the Burger Kings and bottled water in the 7-Eleven; and to watch CNN news on TV at night. It would be difficult not to think that the American culture is ubiquitous in major European cities.

By way of a night train with sleeper cars, I arrived in Copenhagen, Denmark on the morning of Nov. 24th. The sun was shining and the air was cool and fresh when I stepped out of the train station. Once on the street, I couldn’t help but notice the many people commuting to work by bicycle instead of car. The bicycle lanes are as wide as those for cars, and the people seemed quite fit. I believe that there are multiple benefits to using bicycles as a means of local transportation.

My host, Rektor Eivind Winslow, is the director of the Graphic Arts Institute of Denmark (DGH in Danish). The institute is partially government-funded. Its primary mission is to educate promising young men and women for middle and higher management positions in the Danish printing industry. The entering students have a high school diploma plus full-time working experience in the printing industry. They can choose a concentration in graphic design, printing technology, or business economics. Each concentration takes two to three years of study. The Institute also provides technical assistance and management consultation to individual printing companies in Denmark.

I was pleased to meet Christian Teilmann-Ibsen, an Aller Foundation exchange student when he studied at RIT almost ten years ago. At DGH, he manages the networked computer systems with PCs and Macs. The prepress facilities and printing equipment they have are very up-to-date, and I saw many beautiful publications designed, created, and printed by the faculty and students there. To share my knowledge and to exchange ideas about teaching and learning, I gave two seminars to the faculty and the student body (Figure 7). One topic was on color perception and the other addressed color management systems.
students from the Nordic countries as exchange students to study in the United States. RIT has been a popular university and a partner in the pursuit.

I wish I had had more time to see and to enjoy Copenhagen. It is a city with many canals, rivers, and parks, but minus the automobile traffic and pollution. I did manage a small detour, though, and asked a taxi driver to take me to the Little Mermaid statue (Figure 8), a tribute to the Hans Christian Anderson story. The Little Mermaid, made from copper and situated by the shore, is unprotected. Just recently it was vandalized, with her head having been cut off; although, this was not the first time it has happened. I was puzzled as to why anyone would want to do such a thing.

Another night train transported me from Copenhagen to Munich, Germany, where I arrived at the Munich central station on the morning of Nov. 27th. Knowing he would be away during my visit, Mr. Wolfgang Weide of the European Rotogravure Association (ERA) made all the arrangements for me. I spent a very pleasant day meeting with Mr. George Battrick and Mr. Tilo Billeb (Figure 9), technical coordinators of ERA. We were able to visit a prepress equipment manufacturer, the pvd Leonardi Systeme, in town and had excellent discussions on a number of current ERA commissioned projects.

ERA, a sister organization of GAA, is a membership-based industry association across Europe. There are four membership categories: Active, Associate, Affiliate, and Overseas. Active members are companies engaged in publication printing using the rotogravure process. Associate members are companies engaged in manufacturing equipment or materials for use by the rotogravure industry. Affiliate members are publishers without printing facilities, advertising agencies, repro houses, cylinder engravers, packaging gravure printers, etc. Overseas members are companies outside of Europe engaged in publication printing using the rotogravure process. Although the organization is located in Germany, the official language of ERA is English, which is used for meetings and documentation.

ERA has served the European rotogravure printing industry for over forty years, providing an industry forum in the form of annual conferences, management meetings, and technical seminars. It acts as a catalyst to bring member companies together to address common needs and takes an active role in seeking solutions with the help of other research institutes. The latest technical projects are concerned with the effect of product and technology changes on the gravure market, the promotion of the gravure process in general, and process ink specifications for publication printing using the rotogravure process.

With some coaching by the ERA folks on how to utilize the local subway system, I was able to visit FOGRA, the German Graphic Arts Research Institute, the next day. Dr. Michael Has is the Director of the digital prepress and the innovative research divisions at FOGRA and travels free.
sequently to International Color Consortium (ICC) meetings because FOGRA serves as the technical secretariat of the ICC Committee. Has gave me a personal tour of the facilities at FOGRA and described to me a number of projects they’re currently working on. I was very impressed by the depth, as well as the breath, of their research and testing capabilities.

While I was in Munich, I visited the Deutsches Museum (Figure 10), the largest science and industry museum in Europe. There, I saw the entire history of printing technology, from the Gutenberg movable type to desktop publishing, chronologically displayed. I finally was able to attend an opera at the Munich National Theater (Figure 11) — Don Pasquale, performed in Italian. I felt good about being in the audience and experiencing European culture when I was on my own.

Mr. Erwin Widmer, a project manager at EMPA and a long-time friend and colleague of mine, picked me up at the train station. Touring St. Gallen, I saw the Baroque cathedral and the world-renowned Abbey Library, which houses an excellent collection of medieval manuscripts dating back to the 6th century and beyond. The next day, I toured the EMPA facilities, and met the graphic arts research group (Figure 12).

I left Munich on Sunday morning of Nov. 30th by train, traveled through Austria, and arrived at St. Gallen, Switzerland, in the afternoon. St. Gallen is about 50 miles east of Zurich, and is the home of EMPA, the Swiss Federal Laboratories for Materials Testing and Research. EMPA comprises a total of 30 technical sections, each having its special areas of interest, and

(Figure 10) Deutsches Museum in Munich, Germany.

(Figure 11) The Munich National Theater of Performance Arts.

(Figure 12) The graphic arts research group at EMPA.

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Besides having technical discussions, we also discussed the internship program that EMPA offers to international students. EMPA believes that the internship program benefits both the organization and the students from cultural and technology exchange points of view. There have been three RIT students who have gone through the program in the past few years, and all three of them found the program extremely beneficial. Discussions were held on how to encourage more students from the United States to pursue this opportunity in the future.

Leaving St. Gallen for Milan, the train ride was breathtaking, zigzagging through the magnificent Alps (Figure 13). Here, the image of the Alps, with moving trees as a foreground and the valley at the foot of the mountain, represents a precious moment during my train rides through Europe.

In part two of this series, I will take you through OMG Cerutti s.p.a. and report on a number of field trips to gravure cylinder engraving and gravure printing plants in Italy. I will also take you through the paper, pulp, and graphic arts program in Grenoble, France. The last stop of my tour was a visit with Franz Sigg, a world-renowned expert on resolution targets, in Winterthur/Zurich. I will summarize the impact of the trip, and offer suggestions to full-time university faculty members about how they can best prepare themselves as candidates for future GEF Exchange Professors. See you in the summer issue of GRAVURE!

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Gravure Primer

by Cheryl L. Kasunich

Published by GATF and written by the executive vice president of the Gravure Association of America (GAA), this book is designed for anyone who needs to understand the fundamentals of the gravure process, including students, entry-level sales and customer service personnel, print buyers, designers, and desktop publishing professionals.


Orders for Gravure Primer may be placed through GATF, 200 Deer Run Road, Sewickley, PA 15143-2600.

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1997 Gravure Exchange Professor
A Seven-Country European Tour

Bob Chung, R • I • T
(Part 2 in a 2-part series)

Foreword
Part one of this series followed Bob as he started his European tour of gravure industries and educational institutions. His narrative began with his arrival in Helsinki, Finland and went on to Stockholm, Sweden; Copenhagen, Denmark; Munich, Germany; St. Gallen, Switzerland; and ended with his arrival in Milan, Italy.

The Gravure Tour in Italy
Arriving in Milan on Tuesday, December 2nd, I was met by my host, Mr. Flavio D’Andria of Cerutti. Mr. D’Andria is the chief of staff to the President and Chairman of the Board at Cerutti and has been intimately involved in the Gravure Exchange Professor program since its inception. He conducted a personalized tour of Cerutti’s press manufacturing facilities and then accompanied me on visits to a number of gravure cylinder and printing establishments in northern Italy.

The year was 1947 when Giovanni Cerutti built his first rotogravure press in Italy. Cerutti’s milestone events include the first Cerutti press exported to the U.S. in 1956; press speeds reached 45,000 impressions per hour in 1976; the 3.08 meter wide press was built in 1987; and press speeds reached 60,000 impressions per hour in 1995. Today, the Cerutti Group is a rotogravure and flexographic press manufacturer with five production sites, employing over 1,000 people in Europe, America, and Asia.

I had the great pleasure of visiting Cerutti’s gravure press manufacturing facilities in Casale (Figure 1), where computer-aided design (CAD) software packages are used for press design and drafting. In 1997 alone, some 6,500 tons of iron were cast into machine parts with the use of computer-aided manufacturing. Cerutti’s annual report indicates that it holds a major market share in publication rotogravure presses. Its market penetration in the packaging rotogravure press and flexographic newspaper press manufacturing is second to none. To maintain its leadership position, Cerutti is presently building a fully robotized publication rotogravure press for Quebecor, the second largest printer in the U.S. This press is capable of printing a web up to 3.6 meters wide at a maximum speed of 56,000 impressions per hour (or 933 impressions per minute).

While visiting Cerutti in Casale, I met with a group of plant managers from “la Repubblica,” the largest daily Italian newspaper, with plants in Rome, Milan, and elsewhere in Italy. The newspaper is increasing its color coverage in advertising, as well as in editorial, with Cerutti’s flexographic presses. In a seminar setting, I had the opportunity to discuss color reproduction theory with them (Figure 2). Later in the evening, we had a sumptuous dinner at the Boeucc Antico Ristorante in Milan, making it close to midnight by the time I actually visited their flexo newspaper production operations—a long and exciting day by any measure!

The following day, Mr. D’Andria arranged for me to visit Cellografica Gerosa, a gravure cylinder engraver and a packaging gravure printer. Gerosa is an ISO 9002 registered company, meaning it implements a sound quality system for its business, manufacturing, and environmental processes that is process-oriented and prevention-based.
In the cylinder engraving area, Gerosa uses a fleet of Helio-Klischograph digital engravers to prepare images for print (Figure 3). In the press area, they employ five multicolor Cerutti rotogravure presses—all equipped with computerized systems for registration, ink viscosity, and web alignment controls—to print packaging materials for coffee, snacks, chocolate, and other baked goods and food products. I was very impressed by their physical plant, their quality management systems, and their technology utilization in both the domestic and European markets.

Over the next two days, Mr. D’Andria arranged a visit to the Mondadori Group, Italy’s leading publisher and printer of books, magazines, and direct mail marketing. Mondadori’s Marco Polo plant prints TV Guide with rotogravure, and its Verona plant prints books with rotogravure, as well as web offset. Last year, they managed to print 200,000 tons of paper and used over 5,000 tons of ink. During the plant tour, I was given permission to photograph its gravure cylinder engraving and printing operations so that I could share my experiences with others (Figure 5-11).

“I was overwhelmed by my exposure to modern gravure imaging and printing technologies in Italy.”

In Verona, we also visited a technical high school called “San Zeno.” Professor Pietro Chasseur is the person in charge of its prepress and printing curriculum, which stresses hands-on learning. During my visit, I saw many young men and women actively engaged in their laboratory activities (Figures 4a & 4b).

While I was overwhelmed by my exposure to modern gravure imaging and printing technologies in Italy, the impact of Italian culture as a first-time visitor was even greater. In Verona, Mr. D’Andria took me to “the Arena,” a Roman amphitheater built in the 1st century AD.
Figure 5. Close-up of the copper cylinder polishing operation prior to engraving.

Figure 6. Electromechanical cylinder engraving process.

Figure 7. Chrome plating process which gives gravure its long-run capability.

Figure 8. Gravure press enclosed in a noise-controlled environment.

Figure 9. Remote press control console.

Figure 10. Paper webs are transported by conveyor belts to the press sites.
This open-air theater (Figure 12), houses Verona’s opera season in the summer, and seats 30,000 spectators. Aida, Tosca, and Rigoletto, are some of the favorite operas performed there each year (Figure 13). I was happy that my wife, Loyi, could join me during my third weekend in Europe. We went to museums in Florence to experience the 13th through 16th century art and civilization, better known as the Renaissance. We also spent time in Milan and did exactly what most tourists do—shopped, fed the pigeons at the Il Duomo (the fabulous Gothic cathedral), visited La Scala (one of the world’s finest opera houses), and enjoyed great Italian food and wine.

Moving on to France
On Monday, December 10th, we boarded a train and traveled to our next stop, the French Engineering School of Paper and Printing (EFPG), in Grenoble, France. Professor Bernard Pineaux served as our host. Bernard and I met each other about ten years ago when he was a graduate student at RIT. He worked for a business form printer in France after his graduation from RIT and has been a faculty member at EFPG for three years. He had just completed his Ph.D. dissertation when we visited him. Grenoble is situated in the middle of the Alps (Figure 14) and was the home of the 1968 Winter Olympic Games. EFPG is the largest engineering school in France which provides graduates for the paper and printing industries. Currently, there are 180 students enrolled in the undergraduate program, and 50 students enrolled in the graduate school.

Professor Pineaux gave me a tour of EFPG’s facilities. I was very impressed by its paper-making and analytical chemistry laboratories which support a rigorous science- and engineering-based curriculum. Later, I met with the faculty of EFPG and exchanged ideas with regard to student co-ops. The faculty at EFPG values the co-op as a profes-
A professional approach which prepares their students to become more quickly integrated into companies. RIT’s School of Printing Management and Sciences, career-oriented since its inception 60 years ago, shares this same philosophy and has a very strong co-op program of its own. I also met with the Grenoble TAGA Student Chapter (Figure 15). Like the students I met in Sweden, they all spoke very good English and were not afraid to ask questions. Many of them were planning to attend the 1998 TAGA annual conference in Chicago.

**Switzerland Revisited**

On Friday, December 12th, we left Grenoble for Winterthur, Switzerland, to visit Mr. Franz Sigg. Franz is no stranger to us; he has been my colleague at RIT since the mid-1970s. For the past 15 to 20 years, he has managed to spend half a year at RIT as a graphic arts researcher, and the other half of the year designing and manufacturing film-based test targets in Switzerland. With this visit, I was able to finally see what the other half of Franz’s life is like.

Franz’s expertise in graphic arts imaging is in the design and production of resolution targets and their application in image setting or plate setting. With his Swiss precision and ingenuity, Franz designs and manufactures high-resolution test targets, as an OEM, for plate exposure control and color control in offset printing. Franz and his color control bars are an untold story in the graphic arts industry. In his Winterthur lab, he has custom-built a number of mechanical and electro-optical devices to automate his test target manufacturing process (Figure 16). The degree of automation is such that he can manage the entire photographic operation—from film exposing to developing to fixing and washing and quality control—in a single step. Both dot area and density data are measured and recorded under the control of a computer. Audible sounds alert him if there is an occurrence of out-of-spec data while he performs visual inspection on the finished products. Many of the high-quality film-based targets supplied world-wide are manufactured by one individual, and that’s Franz Sigg.

Winterthur, only half an hour train ride from Zurich, has a lot of small town charm. Franz drove us around the countryside, and we visited a monastery which has been transformed into a museum and modern conference site. Surrounding the monastery were vineyards (Figure 17), which are commonly seen throughout Europe. The rows and rows of grapevines were quite photogenic and now serve as an icon to me whenever I think of my trip to Europe. In Zurich, we attended a Christmas concert that was performed by three choral groups in a 16th century church lit only
by candlelight. The sights and sounds of the performance that evening were a new sensation altogether. It was wonderful!

**Trip Reflection**

The GEF Exchange Professorship enabled me to travel to many countries in Europe and to meet many people in the graphic arts industry, research, and educational institutes. All my European hosts treated me as their honored guest. The sharing and exchange of technological knowledge and educational philosophies convinced us all that there is a brighter future.

Education and training were a common issue in all the places that I visited. Keeping curriculum relevant to industry manpower needs is critical. It is the education/industry partnership that will help overcome many obstacles. Having an industry advisory board working with school administration and “adopt-a-professor” or exchange professor programs are all helpful. Other ideas include having industry student co-op programs and organizing faculty/student exchanges between universities.

Gravure imaging and printing continues to be the technology of choice for large-scale print production in Europe. Cerutti exemplifies the excellence of press design and manufacturing. I was impressed by how rotogravure processes were utilized by the Aller Group in its multinational publishing network and by Mondadori with its printing/publishing dominance in Italy and elsewhere in Europe.

Adopting technology for competitiveness is only one of the strategies that European printers are focusing on. Companies, like Gerosa and Mondadori, are also adopting quality management philosophies and quality management systems—as exemplified by the ISO 9000 criteria—in their strategic, business, and manufacturing operations.

Graphic arts technology standards have been pursued rigorously at the international level. My visits to industry associations and research institutes like VTT, EMPA, ERA, and FOGRA suggest that the standardization of digital file formats, data compression, process inks, and color management systems will help all those who are in the information creation process, as well as those who are in information processing and distribution.

The Gravure Education Foundation, as an advocate for education, associates itself with GAA in the United States and with ERA in Europe. The GEF Exchange Professorship is the mechanism that allows a professor from the U.S. to visit his/her counterpart in Europe, and vice versa. Through my own personal experience, I have learned the value and the significance of the program and am glad to add that RIT stands ready to serve as a host for a exchange professor from Europe.

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For more information about the Gravure Education Foundation Exchange Professor Program, contact GEF Executive Director Leon Hart. 302-475-2802