



## BOOK REVIEWS

# global reckoning

*longitude* is dava sobel's deft history of discovering a new tool for commerce and exploration

by Peter Daniel Davis

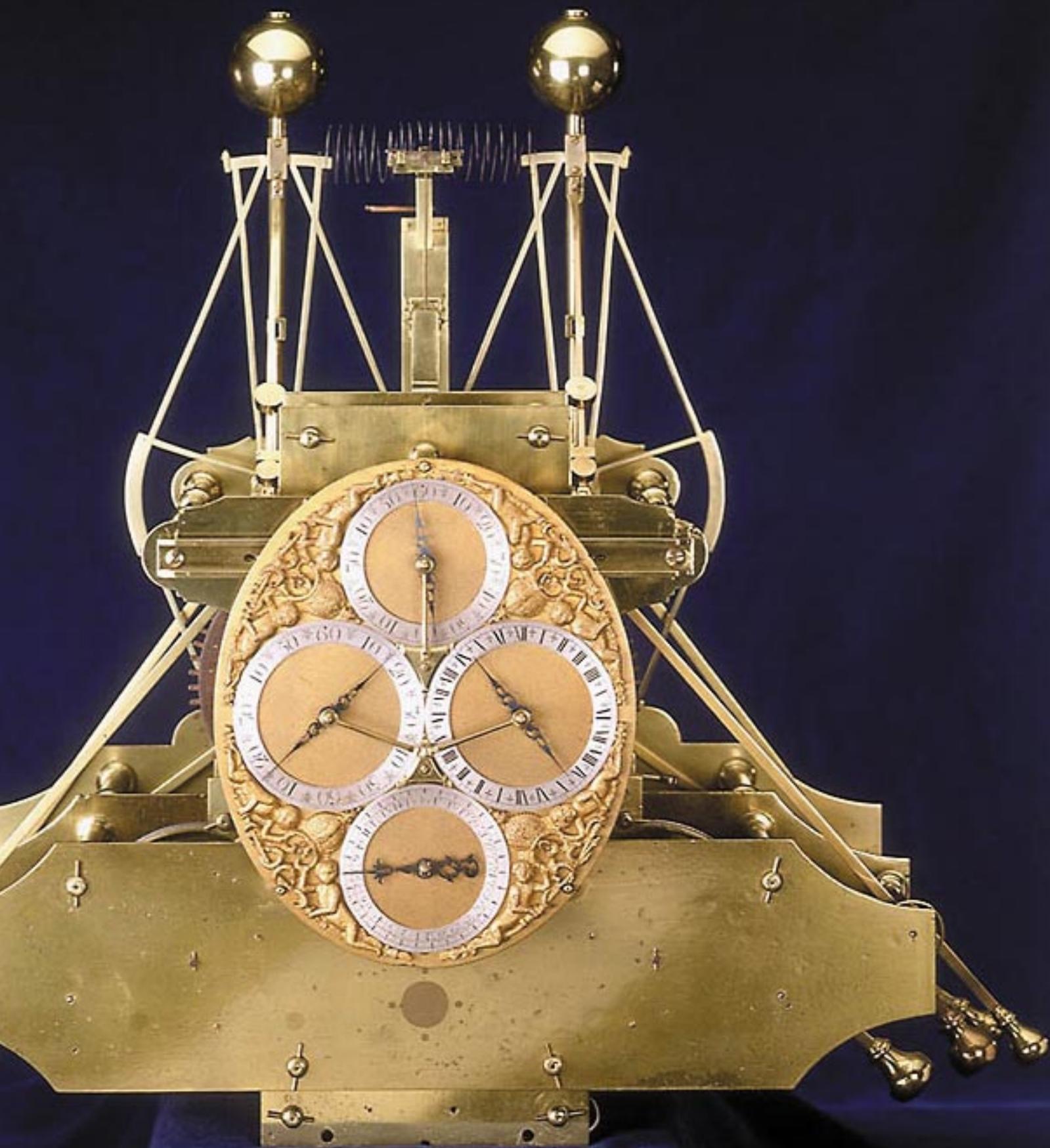
In October 1707, Admiral Sir Cloudisley Shovell, leading a fleet of five warships, hung a sailor for mutiny after he had gone to Sir Cloudisley with the suggestion that their presumed location was incorrect. A day later, four of the five ships had foundered on the shores of the Scilly Isles, roughly 20 miles off the southwest coast of England.

The four wrecks included Sir Cloudisley's flagship, the *Association*. Two thousand men were lost. One of the two men who survived was Sir Cloudisley. He washed up on a beach where he was killed by a woman for his emerald ring. This is the setting for Dava Sobel's short history, *Longitude*, which traces the discovery of a reliable way for a ship to accurately determine its position and thus, be able to plot a dependable course.

Over the centuries, there had been hundreds of such wrecks. It was simple enough for a sailor to calculate a ship's latitude—how far

north or south it was. This could be done using the date in conjunction with the length of the day, the height of the sun, or the position of specific stars. But once it was out of sight from land, there was no known way of calculating a ship's longitude—how far east or west it was. Ship captains would use "dead reckoning," an assortment of crude methods for estimating longitude. But the results of these rough calculations were often tragically inaccurate. Lives were routinely lost either from shipwrecks or from voyages prolonged by wayward navigation, leading to scurvy, a





## BOOK REVIEW: GLOBAL RECKONING

vitamin C deficiency that resulted from a lack of fresh fruits and vegetables.

Prompted in part by the disaster of Sir Cloudisley's fleet, the English Parliament passed the Longitude Act of 1714, offering a prize of £20,000 (several million dollars in modern currency) for anyone who could solve the question of how to determine longitude. The Board of Longitude was established to review applications for the award and to decide if one fulfilled the requirements for winning.

Many astronomers, including Galileo Galilei and Sir Isaac Newton, believed there was a way to calculate longitude based on the positions of the heavenly bodies. Longitude *could* be calculated by the event of a lunar eclipse. But such occasions were too few and far between to be of any practical use. Galileo thought he had come up with a solution by noting the eclipses of the moons of Jupiter, which occurred on a frequent basis. He even devised a helmeted device for sighting the moons. But it was difficult enough to use on land, let alone on a rocking ship. Eventually, work on celestial navigation led to the development of the sextant, which could be used to determine latitude and longitude by measuring the angular distances between celestial bodies.

But there was another approach to the problem. If a clock could be built that would accurately keep the time of a ship's homeport, then it would be possible to calculate longitude based on the difference between that time and the shipboard time. But that was not yet possible. A clock pendulum would not swing back and forth with the same consistent regularity on a rolling ship, and temperature, barometric pressure, or minor variations in the earth's gravitational field in different places would speed up or slow down the workings of a clock.

A self-educated clockmaker named John Harrison developed a series of chronometers—highly accurate clocks—that included works with reduced friction and ball bearings. He used winding mechanisms that eliminated pendulums. And he introduced the use of different metals in combination that countered the effects of their natural tendency to expand and contract.

In 1731, John Harrison presented a seventy-five pound timepiece called the H-1. It was followed by refined and redesigned versions; the H-2 in 1741 weighing in at 86 pounds, the H-3 in 1759 at 60 pounds; and later the H-4 in 1760, and the H-5 in 1770, both chronometers the size of a pocket watch. Finally — a size that could be easily carried and used on shipboard.

But preferring to see the prize go to an astronomer, the Board of Longitude saw fit to change the rules time and again to the detriment of Harrison. In his old age, Harrison was finally awarded the balance of the prize money after years of wrangling with the Board. Although there were some sea captains who immediately recognized the immense value of Harrison's chronometer, for a long time the sextant remained the more popular device. Eventually, the chronometer won out. As more watchmakers began building chronometers, the price became more affordable. The advantages of the chronometer's accuracy and simplicity of use became apparent as declared by Captain James Cook when he voiced his admiration of the device after sailing with it in the Pacific.

Along with longitude, scurvy was also conquered by including sauerkraut, which included vitamin C and did not spoil on ship, in seaman's diets. Later on, the Royal Navy would substitute lemon juice, and eventually limes.

John Harrison's first four chronographs are now housed in the National Maritime Museum in London. In 1920, Lieutenant Commander Rupert T. Gould began the task of carefully restoring them, a task that would take him years.

Chronographs H-1, H-2, and H-3 are actually kept running, a testimony to Harrison's perseverance and ingenuity.

Dava Sobel's book, *Longitude*, is available on GSA Schedule 76, Publication Media.

For more information, please contact:

Lloyd Brown  
(212) 264-0943



# get your message *Out!*

*by Janis Freeman*

**W**ith the need to get information out to the public in a fast and efficient way, Federal communicators and event planners now have

seasoned professionals at their fingertips. Federal agencies that provide the public with crucial information can now use professional contractors to craft and implement their message for maximum-targeted coverage. GSA's Marketing, Media and Public Information Services Schedule is one of the fastest growing Professional Services Schedules in the Federal government. Over the last fiscal year, sales procured through this Schedule have skyrocketed. GSA has contracted with over 400 small, medium and large quality contractors to provide all types of marketing and media services. Some of the services offered under this Schedule include:

- Call Centers (pertaining to market research)
- Crisis communications, media training and media clipping services
- Web site design and video streaming via the web
- Animation, film, and video productions
- Advertising at/on sports events, shopping malls, public transportation, and billboards
- Conference and events planning from small local meetings to large complex events, including high security arrangements
- Broadcast media such as radio/ television advertisements, as well as public service announcements
- Branding, media planning, and market research

## **a change is coming!**

A new and improved Marketing, Media and Public Information Services Schedule is coming soon. Look for a new Schedule name, new Schedule number, and new SIN structure, which will make the Schedule easier to use.

For more information, please visit our website at: [www.gsa.gov/marketingservices](http://www.gsa.gov/marketingservices), or contact your GSA representative:

Janis Freeman  
(703) 305-7633  
(703) 305-6144 fax  
[janis.freeman@gsa.gov](mailto:janis.freeman@gsa.gov)





# QUALITY MAKES ALL THE DIFFERENCE

## LINENS & TOWELS

We can provide cotton blankets, sheets and towels in a variety of sizes, colors and weights for dorm, quarters and medical facilities. All of our products are made with quality you can feel—from the materials to the manufacturing.



ROYAL COURT  
luxurious

NIGHTINGALE  
superior

BIOPOSTURE  
moderate

BARRACKS  
institutional

BODYCARE  
infirmery

BUNK  
grade-C

## MATTRESSES & BOX SPRINGS

We can provide luxurious to moderately priced to polyester and polyurethane mattresses. We also offer a wide range of coordinating box springs.

To order just contact:  
UNICOR Customer Service Center at 800 827-3168  
or visit us online at [www.unicor.gov](http://www.unicor.gov)

For specific product information and ordering contact:  
John D'Alessandro at 202 305-3994.

You can trust UNICOR for on-time delivery, long-lasting value and superior service.

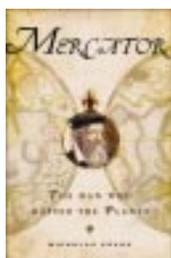


## BOOK REVIEWS

# GLOBAL NOTIONS

by Brian Insolo

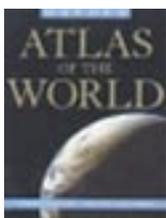
Are you able to name the countries that border Iraq? How about Afghanistan? GSA Schedule 76, Publication Media, offers a wide selection of atlases, maps, and books so you can answer these questions as well learn more about the world, history, and the many places in which GSA Global Supply serves its customers. A sampling of the atlases, maps, and books available under Schedule 76 are listed below.



### **Mercator: The Man Who Mapped the Planet**

Nicholas Crane  
Henry Holt & Company, Inc.  
January 2003

Gerard Mercator, who was born Gerard Kremer in 16th century Europe, created the first modern map and coined the word “atlas.” The importance of Mercator’s map is that it solved the question of how to portray the three-dimensional globe on paper while retaining accurate compass bearings. Crane’s engrossing, well-researched biography follows Mercator through university, as he is incarcerated for seven months on charges of heresy, and as he works on his groundbreaking map. This book is a must read for anyone interested in historical biographies of exploration.



### **Atlas of the World** Oxford University Press Tenth Edition, September 2002

This edition includes work by some of Europe’s top cartographers as well as new maps for the world’s islands, “stunning” satellite images, and maps of the world’s major metropolitan areas. According to *Publisher’s Weekly* “...the heart, and strength, of this atlas remains the hundreds of colorful, beautifully detailed maps, conveying not only topographical features but also disputed boundaries, railways, and principal roads.” *Atlas of the World* is a reliable tool and useful reference for government agencies.



### **Degrees of Latitude: Mapping Colonial America**

Margaret Beck Pritchard, Henry G. Taliferro (Foreword by Ronald Hurst)

Henry N. Abrams, Inc., September 2002

*Degrees of Latitude* illustrates American history through several unpublished maps of colonial America from the 16th to 18th centuries that were used to improve trade and travel and define land claims. Knowing when these maps, taken from the Colonial Williamsburg Foundation, were created allows us to see what really mattered to our ancestors.

For more information, please contact:

Lloyd Brown  
(212) 264-0943  
lloyd.brown@gsa.gov

# the electronic graveyard

old technology proposes new challenges

by Dennis Blood and Emily LeDuc



According to the Institute for Local Self-Reliance, approximately 75 percent of **obsolete electronics** are currently being stored or warehoused until there is agreement on the best way to manage this material. As **stockpiling continues**, there is **growing concern** about the volume of used or obsolete electronic equipment that will need to be **managed responsibly** when it emerges from storerooms or attics...

**O**bssolete electronics are quickly becoming the world's most voluminous waste problem. With technology improving at lightning speed, the need to dispose of old equipment within 3-5 years of purchase has become a major concern, and this lifespan is steadily decreasing. A number of issues characterize this dilemma, including the simple fact that discarded electronics represent a rapidly growing waste stream. Of the estimated 20 million computers that were disposed of in 1998, fewer than 6 percent were recycled. By the year 2005, it is estimated that more than 63 million computers will be disposed of, according to the National Safety Council.

In addition to the sheer volume of equipment, there are resource and environmental concerns as well. Electronic components are comprised of a variety of valuable resources including metals (some precious), engineered plastics, glass, and other materials which require energy to obtain and produce. Re-useable components in many electronic products can be easily harvested and utilized in other applications. Discarding this equipment without using these parts and materials to their full potential is harmful to the environment when energy and resources are spent producing the same or similar components using virgin materials.

Many electronic components contain hazardous or toxic substances including mercury, cadmium, chromium, and some types of flame retardants in amounts that can be harmful and are deemed hazardous by Federal law. The glass screens, or CRTs, in computer monitors and televisions can contain as much as 27 percent lead. Electronic products are the leading source of heavy metal contamination in the solid waste stream. This could result in potential environmental risks, if these items are not disposed of properly.

## accountability and cercla

So what does all this mean for the average electronics disposer? It means quite a bit. Once those outdated electronic components leave your possession they are no longer your problem right? Wrong. CERCLA, the Comprehensive Environmental Response, Compensation, and Liability Act (also known as the SuperFund Act) has determined that an individual waste generator has liabilities through the entire duration of the product.

## potentially responsible parties (prp)

Under CERCLA, those who can be held liable for the costs of responding to a release, or the threat of a release, of hazardous substances are considered to be PRPs. PRPs are defined as:

- Current owners or operators of the facility or vessel;
- Former owners or operators of the facility or vessel, if they owned the property at the time of disposal;
- Those who arrange for treatment or disposal of hazardous substances at a facility (in most cases, the generators); and
- Transporters of hazardous substances who selected the disposal site.



CERCLA liability is retroactive, meaning that parties may be held liable for releases that occurred prior to the enactment of the statute in 1980.

Federal agencies can now utilize proper hazardous waste disposal services through GSA's Environmental Services Schedule. Don't take chances for your agency or our environment. Select your electronic waste or hazardous material recycling contractor from those listed specifically for Reclamation, Recycling, and Disposal Services (SIN 899-5). These vendors will first determine your agency's needs with regard to both physical and data security and then dispose of these assets in a manner that meets your needs. You can feel comfortable once you've selected a vendor from the GSA Environmental Services, and we can all breathe a little easier.

For additional information on this schedule, contact GSA today!

GSA/FSS Management Services Center  
Environmental Services Schedule 899  
800-241-RAIN (7246)  
[environmental@gsa.gov](mailto:environmental@gsa.gov)  
[www.gsa.gov/environmentalservices](http://www.gsa.gov/environmentalservices)

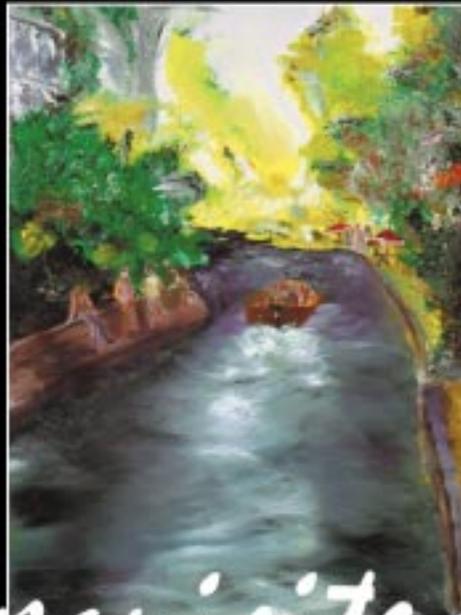
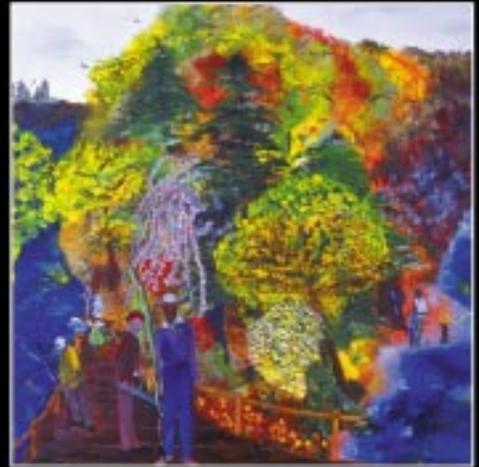
*Sources for The Electronic Graveyard:*  
Environmental Protection Agency – [www.epa.gov](http://www.epa.gov)

Marymichelle



CONTRACT NUMBER:  
GS-03F-0015N

Schedule Title:  
Furnishing & Wall Art



Business Size: Small,  
Disabled Veteran,  
Disadvantaged

Contact: tel: (202)291-5787

fax: (202) 291-5897

6506 McCahill Dr., Laurel, MD 20707

Website: <http://marymichelleart.com>

Email: [marymichelle@marymichelleart.com](mailto:marymichelle@marymichelleart.com)

Exquisite Fine Art

## SCHEDULES

### **MOBIS CONTRACTORS ARE READY TO SUPPORT YOUR INTERNATIONAL MISSION**

MOBIS Schedule 874 has a diverse group of contractors ready to support the international mission of your Federal agency. Here's a partial list that aptly demonstrates the extensive worldwide coverage of MOBIS contractors. To view a more comprehensive list, please visit the GSA portal at [www.gsa.gov](http://www.gsa.gov) and do a search on "MOBIS contractor list".



#### **MOBIS OCONUS**

(Number in parenthesis represents number of MOBIS contractors indicating they have the ability to provide services within that region.)

##### Sub - Saharan Africa

Angola (19)  
Benin (15)  
Burundi (10)  
DR Congo (14)  
Eritrea (11)  
Ethiopia (19)  
Ghana (23)  
Guinea (18)  
Kenya (24)  
Liberia (6)  
Madagascar (9)  
Malawi (11)  
Mali (12)  
Mozambique (12) Namibia (11)  
Nigeria (23)  
Rwanda (8) Senegal (14)  
Sierra Leone (2)  
Somalia (2)  
South Africa (45)  
Sudan (4)  
Tanzania (14)  
Uganda (17)  
Zambia (19)  
Zimbabwe (9)

##### Asia & the Near East

Afghanistan (22)  
Bangladesh (16)  
Cambodia (17)  
Egypt (48)  
India (50)  
Indonesia (42)  
Jordan (24)  
Lebanon (23)  
Mongolia (7)  
Morocco (21)  
Nepal (16)  
Pakistan (19)  
Philippines (31)  
Sri Lanka (14)  
West Bank/Gaza (2)  
Burma (6) China (65)  
East Timor (7)  
Israel (28)  
Laos (11)  
Thailand (34)  
Vietnam (15)  
Yemen (8)

##### Latin America & the Caribbean

Bolivia (29)  
Brazil (61)  
Colombia (33)  
Cuba (8)  
Dominican Republic (22)  
Ecuador (28)  
El Salvador (26)  
Guatemala (28)  
Guyana (20)  
Haiti (20)  
Honduras (27)  
Jamaica (28)  
Mexico (84)  
Nicaragua (20)  
Panama (29)  
Paraguay (13)  
Peru (22)

##### Europe and Eurasia

Albania (24)  
Armenia (25)  
Azerbaijan (13)  
Belarus (16)  
Bosnia-Herzegovina (6)  
Bulgaria (30)  
Croatia (27)  
Cyprus (13)  
Czech Republic (38)  
Georgia (17)  
Kazakhstan (18)  
Kyrgyzstan (7)  
Lithuania (close out site) (18)  
FYR of Macedonia (19)  
Moldova (13)  
Poland (close out site) (48)  
Romania (27)  
Russia (46)  
Serbia & Montenegro (2)  
Serbia (11)  
Slovak Republic (7)  
Tajikistan (2) Turkey (45)  
Turkmenistan (5)  
Ukraine (26)  
Uzbekistan (15)

For additional information on GSA's MOBIS schedule, contact us today!

GSA/FSS Management Services Center  
MOBIS Services Schedule 874  
800-241-RAIN (7246)  
email: [mobis@gsa.gov](mailto:mobis@gsa.gov)  
[www.gsa.gov/mobis](http://www.gsa.gov/mobis)



Federal Supply Group 738  
Contract Number GS-10F-0478N



## We Understand

the Challenges of Communicating  
to a New and Wider Audience

When your message has to reach a wider, more diverse audience, delivering that message can seem like an uphill climb...that next level just a little out of your grasp.

The professional translators and interpreters at **à la carte Languages** are not just linguists, but educated, experienced

professionals with specific fields of expertise.

We invite you to learn more about **à la carte Languages'** strict quality control and confidentiality processes and to experience the **à la carte Languages** difference.

**à la carte Languages** . . . where world-class translating and interpreting services are always within your reach.



(800) 410-0017  
(866) 202-4127 Fax  
[www.alacartelanguages.com](http://www.alacartelanguages.com)

# Cost-effective Offices & Meeting Rooms on Flexible Terms

Now Available for Government Agencies



245 Park Avenue, New York, NY



Open plan offices



1230 Peachtree Street NE, Atlanta, GA



Training & Meeting Rooms



505 Montgomery St., San Francisco, CA



Presentation Rooms

## Complete Flexibility

- Terms ranging from one hour to multiple years
- 1 – 100 workstations
- Configurations to meet all requirements
- Choose from 80 locations in the US; 400 worldwide



## A Cost-effective, Turn-key Solution

- Fully equipped & furnished offices
- High-speed Internet connectivity, telephones lines & equipment built right in
- Full administrative and technical support services
- Videoconferencing facilities
- Meeting rooms by the hour, day or half day
- Available through GSA Schedule #GS-00F-0016N, **GSA Advantage!**<sup>®</sup> and eBuy
- On the Department of Defense's CCR

Call **1 800 353 9281** or visit **www.regus.com**  
or email [ben.fluhart@regus.com](mailto:ben.fluhart@regus.com)

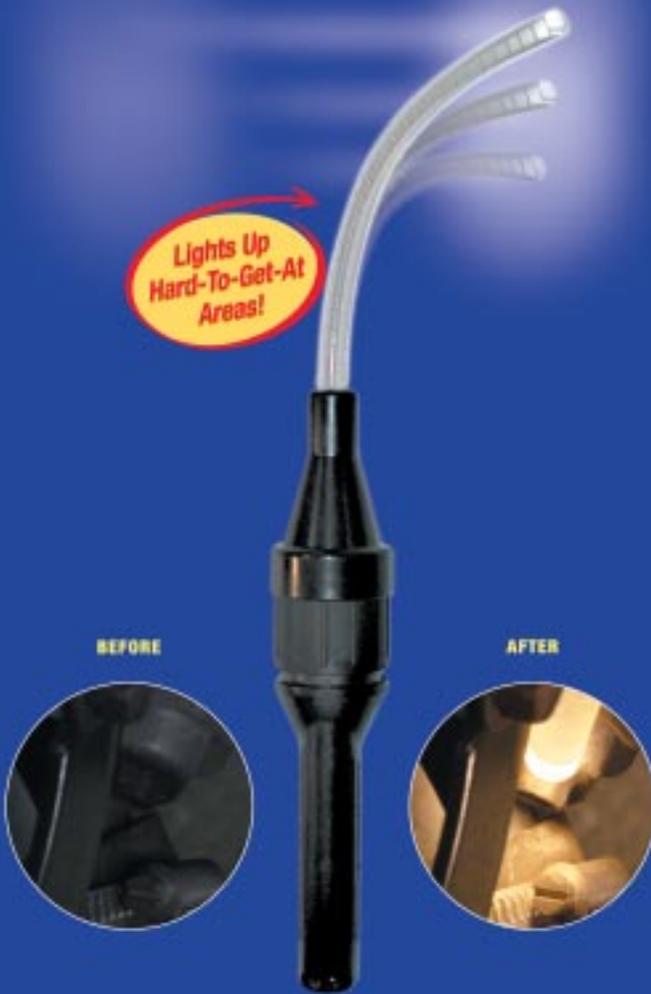


# REVOLUTIONIZE THE WAY YOU LOOK AT WORK.

**GSA** Schedule  
Contract: GS-10F-8883H



Lights Up  
Hard-To-Get-At  
Areas!



The New **3M™ High-Intensity Fiber Optic Flashlight Adapter** and **High-Intensity Fiber Optic Flashlight System** offer the benefits of **BRIGHT, DIRECTED LIGHT** into **SMALL AREAS** without **GLARE** or **SHADOW**.

The fiber enables you **TO BEND LIGHT AND DIRECT IT WHERE NEEDED**.

The **FIBER EMITS NO HEAT** and these systems (Part No.'s 09101 and 09104 ) are **UL LISTED FOR HAZARDOUS LOCATIONS**, Class 1 Division 1 Groups C, D.

**ORDERING INFORMATION:**

PART NO.	DESCRIPTION	QTY./CASE
09100	3M™ Fiber Optic Flashlight Adapter	12
09104	3M™ High-Intensity Fiber Optic Flashlight System (12 in. / 30.5 cm.)	4
09105	3M™ High-Intensity Fiber Optic Flashlight Adapter (12 in. / 30.5 cm.)	4

For customer service, call the 3M Automotive Aftermarket helpline at 1-800-364-3577

For more information, visit our website at: [www.3M.com/automotive](http://www.3M.com/automotive)

**GSA** **Advantage!**  
[www.gsaAdvantage.gov](http://www.gsaAdvantage.gov)

## 3M High-Intensity Fiber Optics

*Innovative Flashlight Systems & Adaptors*